D-Link®

DSL-G624T

Wireless ADSL Router

User's Guide

May 2005

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About This User's Guide

This user's guide provides instructions on how to install the DSL-G624T Wireless ADSL Router and use it to provide Internet access for an Ethernet or 802.11g/802.11b wireless LAN.

If you are using a computer with a functioning Ethernet port, the quickest and easiest way to set up the DSL-G624T is to insert the Installation CD into the CD-ROM drive of your computer and follow the instructions provided in the **Quick Installation Guide**.

Before You Start

Please read and make sure you understand all the prerequisites for proper installation of your new Router. Have all the necessary information and equipment on hand before beginning the installation.

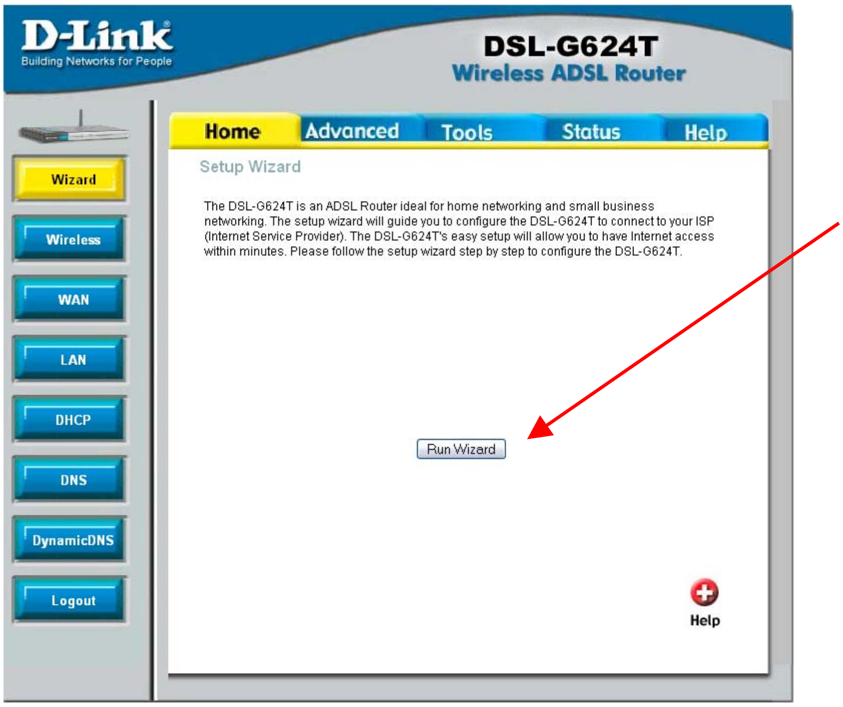
Installation Overview

The procedure to install the Router can be described in general terms in the following steps:

1. Gather information and equipment needed to install the device. Before you begin the actual installation make sure you have all the necessary information and equipment.
2. Install the hardware, connect the cables to the device and connect the power adapter.
3. Check the IP settings on your computer and change them if necessary so the computer can access the web-based software built into the Router.
4. Use the web-based management software to configure the device to suit the requirements of your ADSL service and wireless LAN.

The Setup Wizard

Once you access the web interface use the Setup Wizard to configure your Internet connection.



The DSL-G624T is an ADSL Router ideal for home networking and small business networking. The setup wizard will guide you to configure the DSL-G624T to connect to your ISP (Internet Service Provider). The DSL-G624T's easy setup will allow you to have Internet access within minutes. Please follow the setup wizard step by step to configure the DSL-G624T.

Packing List

Open the shipping carton and carefully remove all items. Make sure that you have the items listed here.

1. One DSL-G624T 802.11g Wireless ADSL Ethernet Router
2. One CD-ROM containing the User's Guide
3. One twisted-pair telephone cable used for ADSL connection
4. One straight-through Ethernet cable
5. One AC power adapter suitable for your electric service
6. One Quick Installation Guide

Installation Requirements

In order to establish a connection to the Internet it will be necessary to provide information to the Router that will be stored in its memory. For some users, only their account information (Username and Password) is required. For others, various parameters that control and define the Internet connection will be required. You can print out the two pages below and use the tables to list this information. This way you have a hard copy of all the information needed to setup the Router. If it is necessary to reconfigure the device, all the necessary information can be easily accessed. Be sure to keep this information safe and private.

Low Pass Filters

Since ADSL and telephone services share the same copper wiring to carry their respective signals, a filtering mechanism may be necessary to avoid mutual interference. A low pass filter device can be installed for each telephone that shares the line with the ADSL line. These filters are easy to install passive devices that connect to the ADSL device and/or telephone using standard telephone cable. Ask your service provider for more information about the use of low pass filters with your installation.

Operating Systems

The DSL-G624T uses an HTML-based web interface for setup and management. The web configuration manager may be accessed using any operating system capable of running web browser software, including Windows 98 SE, Windows ME, Windows 2000, and Windows XP.

Web Browser

Any common web browser can be used to configure the Router using the web configuration management software. The program is designed to work best with more recently released browsers such as Opera, Microsoft Internet Explorer® version 5.0, Netscape Navigator® version 4.7, or later versions. The web browser must have JavaScript enabled. JavaScript is enabled by default on many browsers. Make sure JavaScript has not been disabled by other software (such as virus protection or web user security packages) that may be running on your computer.

Ethernet Port (NIC Adapter)

Any computer that uses the Router must be able to connect to it through the Ethernet port on the Router. This connection is an Ethernet connection and therefore requires that your computer be equipped with an Ethernet port as well. Most notebook computers are now sold with an Ethernet port already installed. Likewise, most fully assembled desktop computers come with an Ethernet NIC adapter as standard equipment. If your computer does not have an Ethernet port, you must install an Ethernet NIC adapter before you can use the Router. If you must install an adapter, follow the installation instructions that come with the Ethernet NIC adapter.

Wireless LAN Configuration

Wireless LAN settings for 802.11g and 802.11b wireless operation must be enabled using the Setup Wizard before it can be configured. Basic wireless settings including the Channel and SSID can be configured through the Setup Wizard. Advanced wireless security settings can also be configured with the Setup Wizard.

Security for wireless communication can be accomplished in a number of ways. The DSL-G624T supports WEP, WPA and WPA -PSK.

Additional Software

It may be necessary to install software on your computer that enables the computer to access the Internet. Additional software must be installed if you are using the device a simple bridge. For a bridged connection, the information needed to make and maintain the Internet connection is stored on another computer or gateway device, not in the Router itself.

If your ADSL service is delivered through a PPPoE, PPPoA or Static IP connection, the information needed to establish and maintain the Internet connection can be stored in the Router. In this case, it is not necessary to install software on your computer. It may however be necessary to change some settings in the device, including account information used to identify and verify the connection.

Information you will need from your ADSL service provider:

Username	This is the Username used to log on to your ADSL service provider's network. It is commonly in the form – user@isp.com. Your ADSL service provider uses this to identify your account.	Record info here
Password	This is the Password used, in conjunction with the Username above, to log on to your ADSL service provider's network. This is used to verify the identity of your account.	
WAN Setting / **Connection Type**	These settings describe the method your ADSL service provider uses to transport data between the Internet and your computer. Most users will use the default settings. You may need to specify one of the following WAN Setting and Connection Type configurations (Connection Type settings listed in parenthesis): PPPoE/PPoA (PPPoE LLC, PPPoA LLC or PPPoA VC-MUX) Bridge Mode (1483 Bridged IP LLC or 1483 Bridged IP VC-MUX) Static IP Address (Bridged IP LLC, 1483 Bridged IP VC-MUX, 1483 Routed IP LLC, 1483 Routed IP VC-MUX or IPoA) Dynamic IP Address (1483 Bridged IP LLC or 1483 Bridged IP VC-MUX) Default = PPPoE/PPPoA (PPPoE LLC)	
VPI	Most users will not be required to change this setting. The Virtual Path Identifier (VPI) is used in conjunction with the Virtual Channel Identifier (VCI) to identify the data path between your ADSL service provider's network and your computer. If you are setting up the Router for multiple virtual connections, you will need to configure the VPI and VCI as instructed by your ADSL service provider for the additional connections. This setting can be changed in the WAN menu of the web management interface. Default value = 8	
VCI	Most users will not be required to change this setting. The Virtual Channel Identifier (VCI) used in conjunction with the VPI to identify the data path between your ADSL service provider's network and your computer. If you are setting up the Router for multiple virtual connections, you will need to configure the VPI and VCI as instructed by your ADSL service provider for the additional connections. This setting can be changed in the WAN menu of the web management interface. Default value = 35	

Note

The Setup Wizard can be used to configure the Internet connection for most users. If you are using a PPPoE or PPPoA type connection use the Setup Wizard to establish the Internet connection.

Information you will need about your DSL-G624T ADSL Router:

Username	This is the Username needed access the Router's management interface. When you attempt to connect to the device through a web browser you will be prompted to enter this Username. The default Username for the Router is **admin**. The user cannot change this.	Record info here
Password	This is the Password you will be prompted to enter when you access the Router's management interface. The default Password is **admin**. The user may change this.	
LAN IP addresses for the DSL-G624T	This is the IP address you will enter into the Address field of your web browser to access the Router's configuration graphical user interface (GUI) using a web browser. The default IP address is **192.168.1.1**. This may be changed to suit any IP address scheme the user desires. This address will be the base IP address used for DHCP service on the LAN when DHCP is enabled.	
LAN Subnet Mask for the DSL-G624T	This is the subnet mask used by the DSL-G624T, and will be used throughout your LAN. The default subnet mask is **255.255.255.0**. This can be changed later.	

Information you will need about your LAN or computer:

Ethernet NIC	If your computer has an Ethernet NIC, you can connect the DSL-G624T to this Ethernet port using an Ethernet cable. You can also use the Ethernet ports on the DSL-G624T to connect to other computer or Ethernet devices.	Record info here
DHCP Client status	Your DSL-G624T ADSL Router is configured, by default, to be a DHCP server. This means that it can assign an IP address, subnet mask, and a default gateway address to computers on your LAN. The default range of IP addresses the DSL-G624T will assign are from **192.168.1.2** to **192.168.1.254**. Your computer (or computers) needs to be configured to **Obtain an IP address automatically** (that is, they need to be configured as DHCP clients.)	

It is recommended that your collect and record this information here, or in some other secure place, in case you have to re-configure your ADSL connection in the future.

Once you have the above information, you are ready to setup and configure your DSL-G624T ADSL Router.

Introduction

This section provides a brief description of the Router, its associated technologies and a list of Router features.

Router Description and Operation

The DSL-G624T Router is designed to provide a simple and cost-effective ADSL Internet connection for a private Ethernet or 802.11g/802.11b wireless network. The Router combines high-speed ADSL Internet connection, IP routing for the LAN and wireless connectivity in one package.

The Router is easy to install and use. The DSL-G624T connects to an Ethernet LAN or computers via standard Ethernet ports. The ADSL connection is made using ordinary telephone line with standard connectors. Multiple workstations can be networked and connected to the Internet using a single Wide Area Network (WAN) interface and single global IP address. The advanced security enhancements, packet filtering and port redirection, can help protect your network from potentially devastating intrusions by malicious agents from outside your network.

ADSL

Asymmetric Digital Subscriber Line (ADSL) is a broadband network technology that utilizes standard twisted-pair copper wire telephone lines to enable broadband high-speed digital data transmission and bandwidth hungry applications for business and residential customers.

ADSL routers and modems provide faster downloads and more reliable connectivity to the user without loss of quality or disruption of voice/fax telephone capabilities.

ADSL service operates at speeds of up to 8 Mbps downstream and up to 640 Kbps upstream. A secure dedicated point-to-point connection is established between the user and the central office of the service provider.

802.11g Wireless

The embedded 802.11g wireless access point provides Internet access and connectivity to the Ethernet for 802.11g and 802.11b wireless workstations. IEEE 802.11g is fully compatible with IEEE 802.11b wireless devices. The 802.11g standard supports data transfer rates of up to 54 Mbps. The Router's wireless access point supports common security protocols used for wireless LAN including WEP encryption, 802.1x and WPA.

Router Features

The DSL-G624T Wireless ADSL Router utilizes the latest ADSL enhancements to provide a reliable Internet portal suitable for most small to medium sized offices. DSL-G624T advantages include:

- **802.11g Wireless Access Point** – The built-in 802.11g wireless access point connects 802.11g and 802.11b wireless devices to the Internet and the Ethernet.

- **PPP (Point-to-Point Protocol) Security –** The DSL-G624T ADSL Router supports PAP (Password Authentication Protocol) and CHAP (Challenge Handshake Authentication Protocol) for PPP connections.

- **DHCP Support –** Dynamic Host Configuration Protocol automatically and dynamically assigns al LAN IP settings to each host on your network. This eliminates the need to reconfigure every host whenever changes in network topology occur.

- **Network Address Translation (NAT) –** For small office environments, the DSL-G624T allows multiple users on the LAN to access the Internet concurrently through a single Internet account. This provides Internet access to everyone in the office for the price of a single user.

  NAT improves network security in effect by hiding the private network behind one global and visible IP address. NAT address mapping can also be used to link two IP domains via a LAN-to-LAN connection.

- **TCP/IP (Transfer Control Protocol/Internet Protocol) –** The DSL-G624T supports TCP/IP protocol, the language used for the Internet. It is compatible with access servers manufactured by major vendors.

- **RIP-1/RIP-2 –** The DSL-G624T supports both RIP-1 and RIP-2 exchanges with other routers. Using both versions lets the Router to communicate with all RIP enabled devices.
- **Static Routing –** This allows you to select a data path to a particular network destination that will remain in the routing table and never "age out". If you wish to define a specific route that will always be used for data traffic from your LAN to a specific destination within your LAN (for example to another router or a server) or outside your network (to a ISP defined default gateway for instance).
- **Default Routing –** This allows you to choose a default path for incoming data packets for which the destination address is unknown. This is particularly useful when if the Router functions as the sole connection to the Internet.
- **ATM (Asynchronous Transfer Mode) –** The DSL-G624T supports Bridged Ethernet over ATM (RFC1483), IP over ATM (RFC1577) and PPP over ATM (RFC 2364).
- **Precise ATM Traffic Shaping –** Traffic shaping is a method of controlling the flow rate of ATM data cells. This function helps to establish the Quality of Service for ATM data transfer.
- **G.hs (Auto-handshake) –** This allows the Router to automatically choose either the G.lite or G.dmt ADSL connection standards.
- **High Performance –** Very high rates of data transfer are possible with the Router. Up to eight Mbps downstream bit rate using the G.dmt standard.
- **Full Network Management –** The DSL-G624T incorporates SNMP (Simple Network Management Protocol) support for web-based management and text-based network management via an RS-232 or Telnet connection.
- **Telnet Connection –** The Telnet enables a network manager to access the Router's management software remotely.
- **Easy Installation –** The DSL-G624T uses a web-based graphical user interface program for convenient management access and easy set up. Any common web browser software can be used to manage the Router.

Standards Compatibility and Compliance

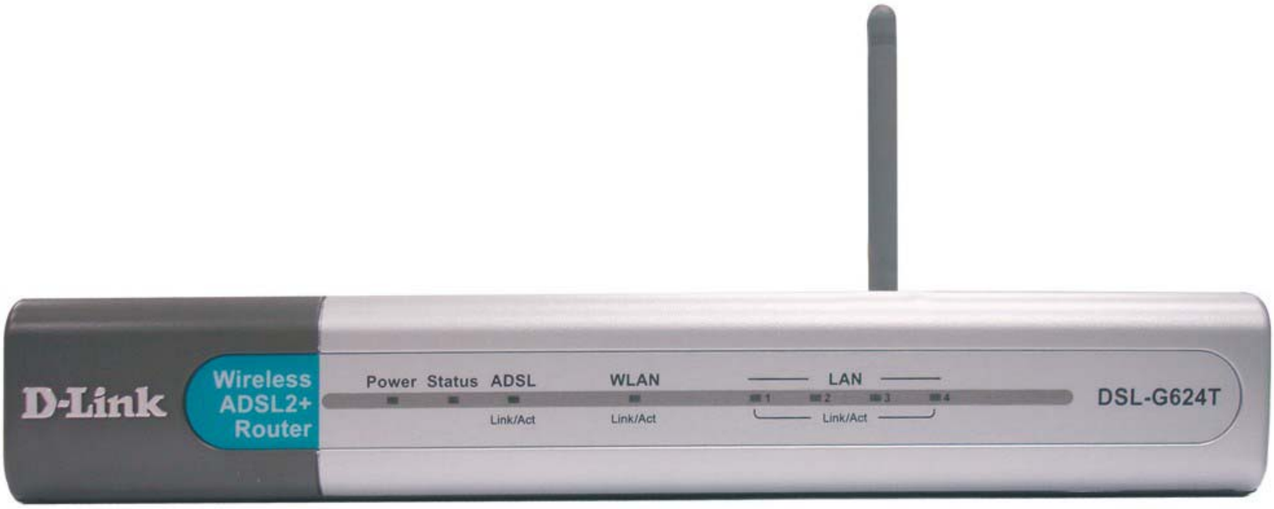
The DSL-G624T complies with or is compatible with the following standards as recognized by their respective agencies.

- ITU G.992.2 (G.lite) compliant
- ITU-T Rec. I.361 compliant
- RFC 791 Internet Protocol compliant
- RFC 792 UDP compliant
- RFC 826 Address Resolution Protocol compliant (ARP) compliant
- RFC 1058 Routing Information Protocol (RIP) compliant
- RFC 1213 MIB II for IP compliant
- RFC 1334 PPP Authentication Protocol compliant
- RFC 1389 Routing Information Protocol 2 (RIP2) compliant
- RFC 1483 IP over AAL5/ Bridged Ethernet over AAL5 compliant
- RFC 1557 Classical IP over ATM (IPoA) compliant
- RFC 1661 Point to Point Protocol (PPP) compliant
- RFC 1877 Automatic IP assignment compliant
- RFC 1994 Challenge Handshake Authentication Protocol compliant
- Supports RFC 2131 and RFC 2132 DHCP functions including: automatic assignment of IP address, use of subnet mask and default gateway and provision of DNS server address for all hosts
- RFC 2364 PPP over ATM compliant (PPPoA) compliant
- RFC 2516 PPP over Ethernet compliant (PPPoE) compliant
- RFC 2684 Bridged/Routed Ethernet over ATM compliant
- IEEE 802.3 compliant
- IEEE 802.3u compliant
- IEEE 802.1d compliant
- IEEE 802.11g compliant
- IEEE 802.3x compliant
- Embedded web server support
- Supports Dynamic Learning
- Supports Static Routing
- Supports NAPT for up to 4096 connections
- Supports DHCP for up to 253 hot connections
- Supports IGMP
- Supports ATM Forum UNI 3.1/4.0
- Supports ATM VCC (Virtual Channel Circuit) for up to eight sessions
- Supports TELNET and TFTP
- Supports back pressure for half-duplex

Front Panel Display

Place the Router in a location that permits an easy view of the LED indicators on the front panel.

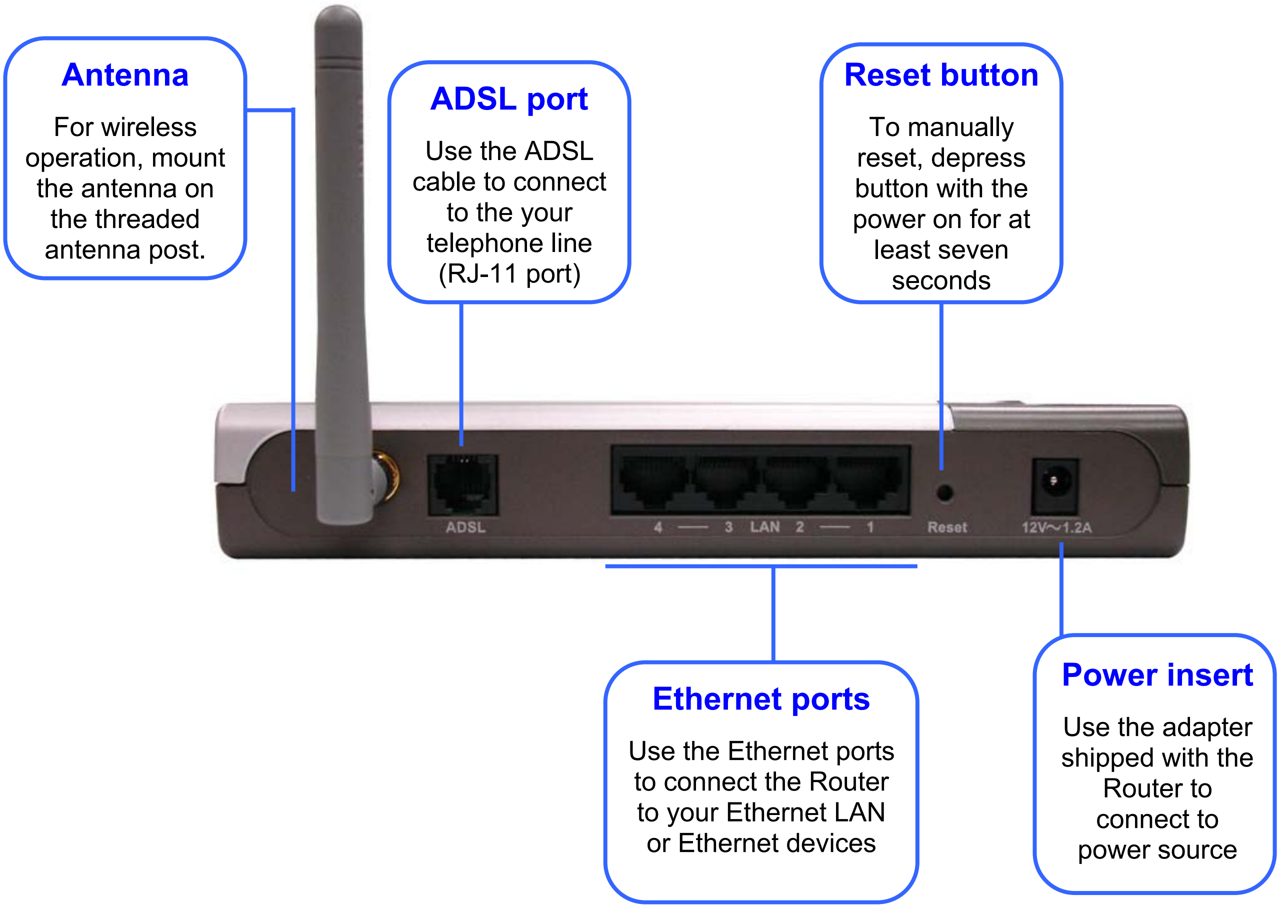
The LED indicators on the front panel include the **Power**, **Status**, **ADSL** and **WLAN** and **Ethernet (1-4) Link/Act** indicators. The ADSL, WLAN and Ethernet indicators monitor link status and activity (Link/Act).



Power	Steady green light indicates the unit is powered on. When the device is powered off this remains dark.
Status	Lights steady green during power on self-test (POST). Once the connection status has been settled, the light will blink green. If the indicator lights steady green after the POST, the system has failed and the device should be rebooted.
ADSL (Link/Act)	Steady green light indicates a valid ADSL connection. This will light after the ADSL negotiation process has been settled. A blinking green light indicates activity on the WAN (ADSL) interface.
WLAN (Link/Act)	Steady green light indicates a wireless connection. A blinking green light indicates activity on the WLAN interface.
Ethernet (Link/Act) 1 - 4	A solid green light indicates a valid link on startup. This light will blink when there is activity currently on the Ethernet ports.

Rear Panel Connections

All cable connections to the Router are made at the rear panel. Connect the power adapter here to power on the Router. Use the Reset button to restore the settings to the factory default values in the next chapter for instructions on using the reset button).



Antenna

For wireless operation, mount the antenna on the threaded antenna post.

ADSL port

Use the ADSL cable to connect to the your telephone line (RJ-11 port)

Reset button

To manually reset, depress button with the power on for at least seven seconds

Ethernet ports

Use the Ethernet ports to connect the Router to your Ethernet LAN or Ethernet devices

Power insert

Use the adapter shipped with the Router to connect to power source

Note

To manually reboot the Router, disconnect and then reconnect the power.

Wireless LAN Basics

Some basic understanding of 802.11b/g wireless technology and terminology is useful when you are setting up the Router or any wireless access point. If you are not familiar with wireless networks please take a few minutes to learn the basics.

Radio Transmission

Wireless LAN or WLAN devices use electromagnetic waves within a broad, unlicensed range of the radio spectrum to transmit and receive radio signals. When a wireless access point is present, it becomes a base station for the WLAN nodes in its broadcast range. WLAN nodes transmit digital data using FM (frequency modulation) radio signals. WLAN devices generate a carrier wave and modulate this signal using various techniques. Digital data is superimposed onto the carrier signal. This radio signal carries data to WLAN devices within range of the transmitting device. The antennae of WLAN devices listen for and receive the signal. The signal is demodulated and the transmitted data extracted. The transmission method used by the access point is called Direct Sequence Spread Spectrum (DSSS) and operates in a range of the radio spectrum between 2.4GHz and 2.5GHz for transmission. See the technical specifications for more details on wireless operation.

Range

Range should not be a problem in most homes or small offices. If you experience low or no signal strength in some areas, consider positioning the Router in a location between the WLAN devices that maintains a roughly equal straight-line distance to all devices that need to access the Router through the wireless interface. Adding more 802.11g access points to rooms where the signal is weak can improve signal strength. Read the section about placement of the Router titled Location in the next chapter, Hardware Installation, for more information.

SSID

Wireless networks use an SSID (Service Set Identifier) to allow wireless devices to roam within the range of the network. Wireless devices that wish to communicate with each other must use the same SSID. Several access points can be set up using the same SSID so that wireless stations can move from one location to another without losing connection to the wireless network.

The DSL-G624T operates in *Infrastructure* mode. It controls network access on the wireless interface in its broadcast area. It will allow access to the wireless network to devices using the correct SSID after a negotiation process takes place. By default he DSL-G624T broadcasts its SSID so that any wireless station in range can learn the SSID and ask permission to associate with it. Many wireless adapters are able to survey or scan the wireless environment for access points. An access point in Infrastructure mode allows wireless devices to survey that network and select an access point with which to associate. You may disable SSID broadcasting in the web manager’s wireless menu.

Wireless Security

Various security options are available on the DSL-G624T including open or WEP and WPA (including WPA-PSK). Authentication may use an open system or a shared key. For details on these methods and how to use them, please read the wireless LAN configuration information in chapters 3 (Basic Router Configuration) and 4 (Advanced Router Configuration) below.

About 802.11g Wireless

Today's 11-megabits-per-second 802.11b wireless networks are fine for broadband Internet access (which typically tops out at about 1 mbps) but rather slow for large internal file transfers or streaming video. However, 54-mbps, corporate-oriented 802.11a is expensive--and because its radio uses the 5-GHz band and 802.11b uses the 2.4-GHz band, upgrading to an 802.11a network means either scrapping 802.11b gear or buying even-pricier hardware that can support both standards.

But 802.11g promises the same speed as 802.11a and the ability to coexist with 802.11b equipment on one network, since it too uses the 2.4-GHz band.

802.11g is an extension to 802.11b, the basis of many wireless LANs in existence today. 802.11g will broaden 802.11b's data rates to 54 Mbps within the 2.4 GHz band using OFDM (orthogonal frequency division multiplexing) technology. Because of backward compatibility, an 802.11b radio card will interface directly with an 802.11g access point (and vice versa) at 11 Mbps or lower depending on range. You should be able to upgrade the newer 802.11b access points to be 802.11g compliant via relatively easy firmware upgrades.

Similar to 802.11b, 802.11g operates in the 2.4GHz band, and the transmitted signal uses approximately 30MHz, which is one third of the band. This limits the number of non-overlapping 802.11g access points to three, which is the same as 802.11b.

Hardware Installation

The DSL-G624T maintains three separate interfaces, an Ethernet LAN, a wireless LAN and an ADSL (WAN) interface. Place the Router in a location where it can be connected to the various devices as well as to a power source. The Router should not be located where it will be exposed to moisture or excessive heat. Make sure the cables and power cord are placed safely out of the way so they do not create a tripping hazard. As with any electrical appliance, observe common sense safety procedures.

The Router can be placed on a shelf or desktop, ideally you should be able to see the LED indicators on the front if you need to view them for troubleshooting.

Choosing the Best Location for Wireless Operation

Many environmental factors can affect the effective wireless function of the DSL-G624T. If this is your first time setting up a wireless network device, read and consider the points listed below.

The access point can be placed on a shelf or desktop, ideally you should be able to see the LED indicators on the front if you need to view them for troubleshooting.

Designed to go up to 100 meters indoors and up to 300 meters outdoors, Wireless LAN lets you access your network from anywhere you want. However, the number of walls, ceilings, or other objects that the wireless signals must pass through can limit signal range. Typical ranges vary depending on the types of materials and background RF noise in your home or business. For optimum range and signal strength, use these basic guidelines:

1. **Minimize the number of walls and ceilings between access points and clients:** The signal emitted from Wireless LAN devices can penetrate through ceilings and walls. However, each wall or ceiling can reduce the range of Wireless LAN devices from 1 to 30M. Position your wireless devices so that the number of walls or ceilings obstructing the signal path is minimized.

2. **Consider the direct line between access points and workstations:** A wall that is 0.5 meters thick, at a 45-degree angle appears to be almost 1 meter thick. At a 2-degree angle, it is over 14 meters thick. Be careful to position access points and client adapters so the signal can travel straight through (90º angle) a wall or ceiling for better reception.

3. **Building Materials make a difference:** Buildings constructed using metal framing or doors can reduce effective range of the device. If possible, position wireless devices so that their signal can pass through drywall or open doorways, avoid positioning them so that their signal must pass through metallic materials. Poured concrete walls are reinforced with steel while cinderblock walls generally have little or no structural steel.

4. **Position the antennas for best reception.** Play around with the antenna position to see if signal strength improves. Some adapters or access points allow the user to judge the strength of the signal.

5. **Keep your product away (at least 1-2 meters) from electrical devices:** Position wireless devices away from electrical devices that generate RF noise such as microwave ovens, monitors, electric motors, etc.

Power on Router

CAUTION: The Router must be used with the power adapter included with the device.

To power on the Router:

1. Insert the AC Power Adapter cord into the power receptacle located on the rear panel of the Router and plug the adapter into a suitable nearby power source.
2. You should see the Power LED indicator light up and remain lit. The Status LED should light solid green and begin to blink after a few seconds.
3. If the Ethernet port is connected to a working device, check the Ethernet Link/Act LED indicators to make sure the connection is valid. The Router will attempt to establish the ADSL connection, if the ADSL line is connected and the Router is properly configured this should light up after several seconds. If this is the first time installing the device, some settings may need to be changed before the Router can establish a connection.

Factory Reset Button

The Router may be reset to the original factory default settings by depressing the reset button for a few seconds while the device is powered on. Use a ballpoint or paperclip to gently push down the reset button. Remember that this will wipe out any settings stored in flash memory including user account information and LAN IP settings. The device settings will be restored to the factory default IP address 192.168.1.1 and the subnet mask is 255.255.255.0, the default management Username is **admin** and the default Password is **admin**.

Wired Network Connections

Wired network connections are provided through the ADSL port and the four Ethernet ports on the back of the Router. See the Rear Panel diagram above and the illustrations below for examples.

Connect ADSL Line

Use the ADSL cable included with the Router to connect it to a telephone wall socket or receptacle. Plug one end of the cable into the ADSL port (RJ-11 receptacle) on the rear panel of the Router and insert the other end into the RJ-11 wall socket. If you are using a low pass filter device, follow the instructions included with the device or given to you by your service provider. The ADSL connection represents the WAN interface, the connection to the Internet. It is the physical link to the service provider's network backbone and ultimately to the Internet.

Connect Router to Ethernet

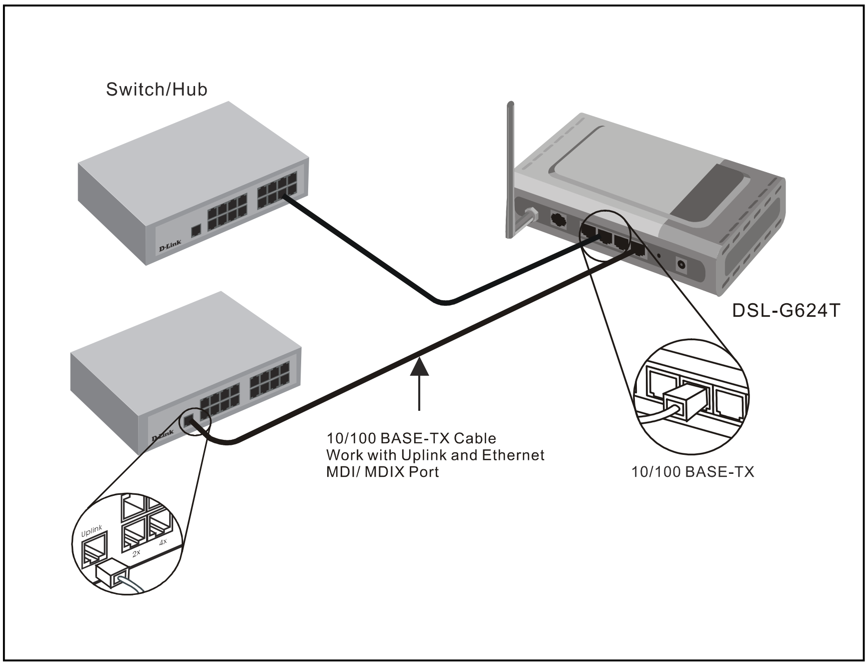
The Router may be connected to a single computer or Ethernet device through the 10/100 BASE-TX Ethernet port on the rear panel. Any connection to an Ethernet concentrating device such as a switch or hub must operate at a speed of 10/100 Mbps only. When connecting the Router to any Ethernet device that is capable of operating at speeds between 0~100Mbps, be sure that the device has auto-negotiation (NWay) enabled for the connecting port.

Use standard twisted-pair cable with RJ-45 connectors. The RJ-45 port on the Router is a crossed port (MDI-X). Follow standard Ethernet guidelines when deciding what type of cable to use to make this connection. When connecting the Router directly to a PC or server use a normal straight-through cable. You should use a crossed cable when connecting the Router to a normal (MDI-X) port on a switch or hub. Use a normal straight-through cable when connecting it to an uplink (MDI-II) port on a hub or switch.

The rules governing Ethernet cable lengths apply to the LAN to Router connection. Be sure that the cable connecting the LAN to the Router does not exceed 100 meters.

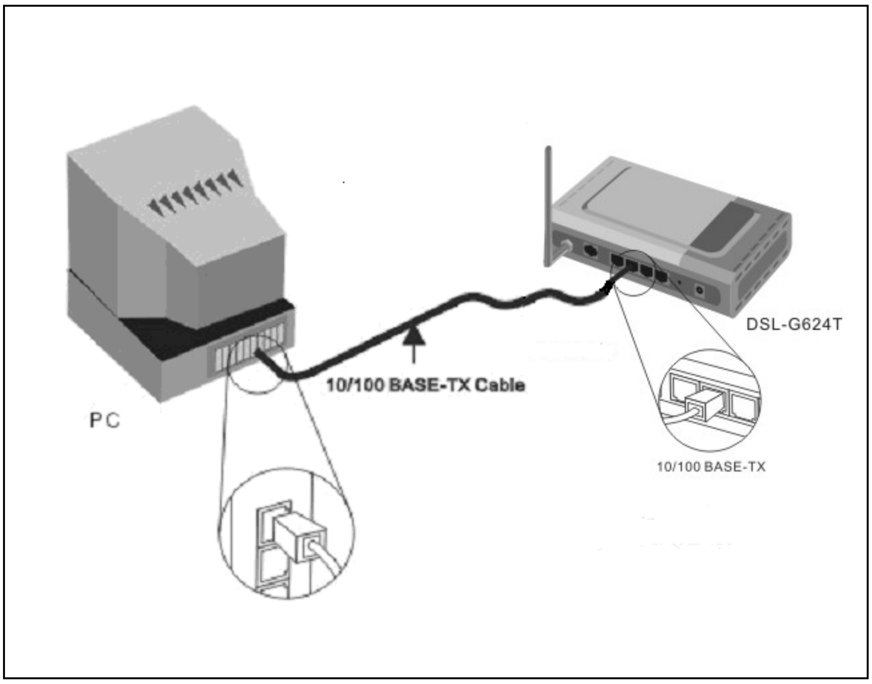
Hub or Switch to Router Connection

Connect the Router to an uplink port (MDI-II) on an Ethernet hub or switch with a straight-through cable as shown in the diagram below:



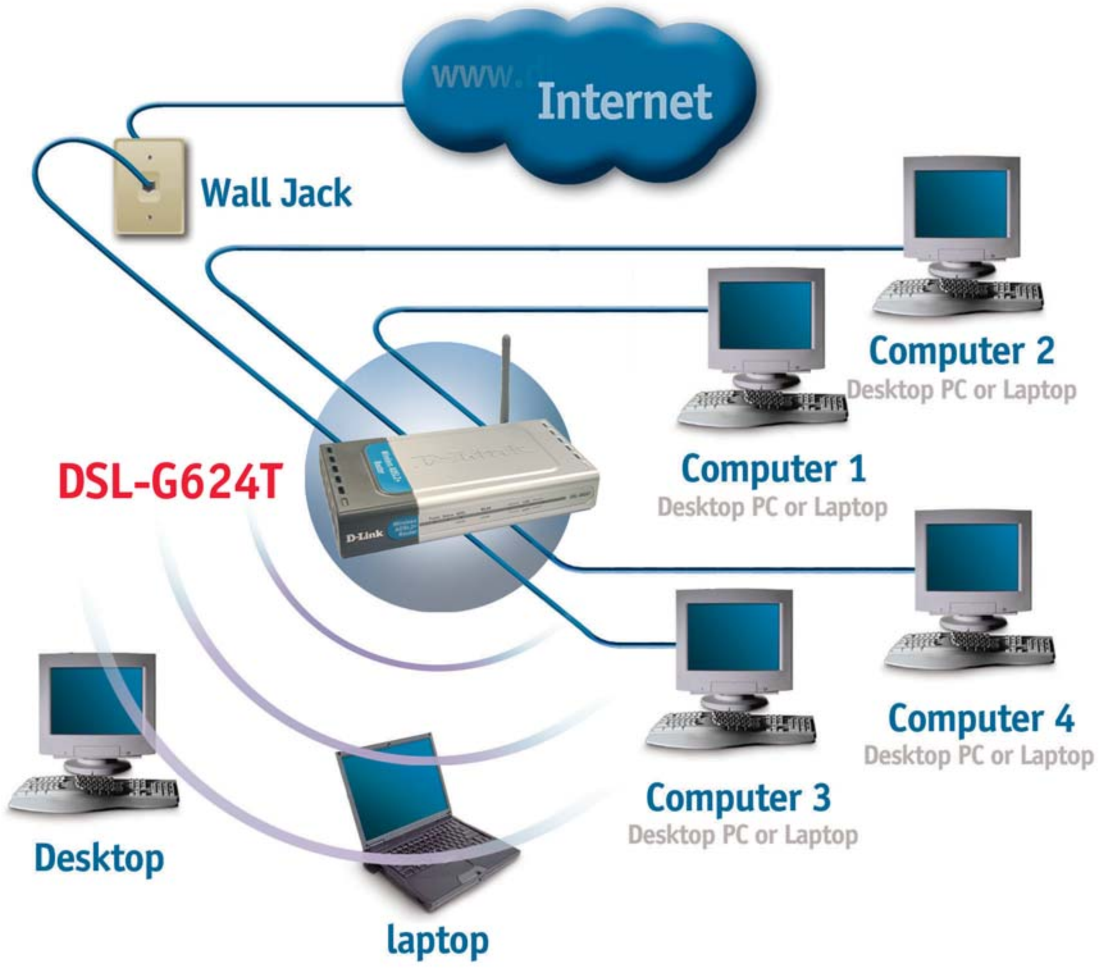
If you wish to reserve the uplink port on the switch or hub for another device, connect to any on the other MDI-X ports (1x, 2x, etc.) with a crossed cable.

Computer to Router Connection



You can connect the Router directly to a 10/100BASE-TX Ethernet adapter card (NIC) installed on a PC using the Ethernet cable provided as shown in this diagram.

The illustration below shows the DSL-G624T connected to Ethernet LAN devices, Wireless LAN devices and the Internet.



Basic Router Configuration

The first time you setup the Router it is recommended that you configure the WAN connection using a single computer making sure that both the computer and the Router are not connected to the LAN. Once the WAN connection is functioning properly, you may continue to make changes to Router configuration including IP settings and DHCP setup. This chapter is concerned mainly with using your computer to configure the WAN connection. Instructions are also provided for basic Wireless LAN configuration. The following chapter describes how to set up the advanced features of the Router.

Configuration Summary

1. **Connect to the Router** To configure various settings used by the Router for Internet and Wireless LAN access it is first necessary to access the Router's management HTML-based interface. This is done using an ordinary web browser. Your computer must be able to "see" the Router before it can manage it using a browser. If the Router is in the same "neighborhood" or subnet as the Router, you should be able to access the management software. Therefore you must first make sure your computer has IP settings that place it in the same subnet as the Router. The easiest way to make sure your computer has the correct IP settings is to configure it to use the DHCP server in the Router. The DHCP server will automatically enable your computer to use a browser to manage the Router. The next section describes how to change the IP configuration for a computer running a Windows operating system to be a DHCP client. If you are running another operating system, make sure your computer is configured as a DHCP client so it can automatically obtain IP settings from the Router. Some operating systems will automatically select the best IP settings. Consult the user manual for the operating system (OS) if you are unsure.

2. **Configure the Internet (WAN) Connection** Most users will be able to complete this process using the **Setup Wizard**. The Setup Wizard can be launched once you have successfully connected with the Router's management software. There are different methods used to establish the WAN connection to the service provider's network and ultimately to the Internet. Your Router may already have most of the settings configured by default. However you will probably at least have to type in a user name and password given to you by your ISP. You may also need to know the encapsulation and connection type required to use for your ADSL service. Your service provider should provide all the information needed to configure the WAN connection.

3. **Configure the Wireless Connection** Use the Wireless Settings menu to configure the SSID, Channel and Security settings for your 802.11g wireless network.

Configuring IP Settings on Your Computer

In order to configure your system to receive IP settings from the Router it must first have the TCP/IP protocol installed. If you have an Ethernet port on your computer, it probably already has TCP/IP protocol installed. If you are using Windows XP the TCP/IP is enabled by default for standard installations. Below is an illustrated example of how to configure a Windows XP system to automatically obtain IP settings from the Router. Following this example is a step-by-step description of the procedures used on the other Windows operating systems to first check if the TCP/IP protocol has been installed; if it is not, instructions are provided for installing it. Once the protocol has been installed you can configure the system to receive IP settings from the Router.

For computers running non-Windows operating systems, follow the instructions for your OS that configure the system to receive an IP address from the Router, that is, configure the system to be a DHCP client.

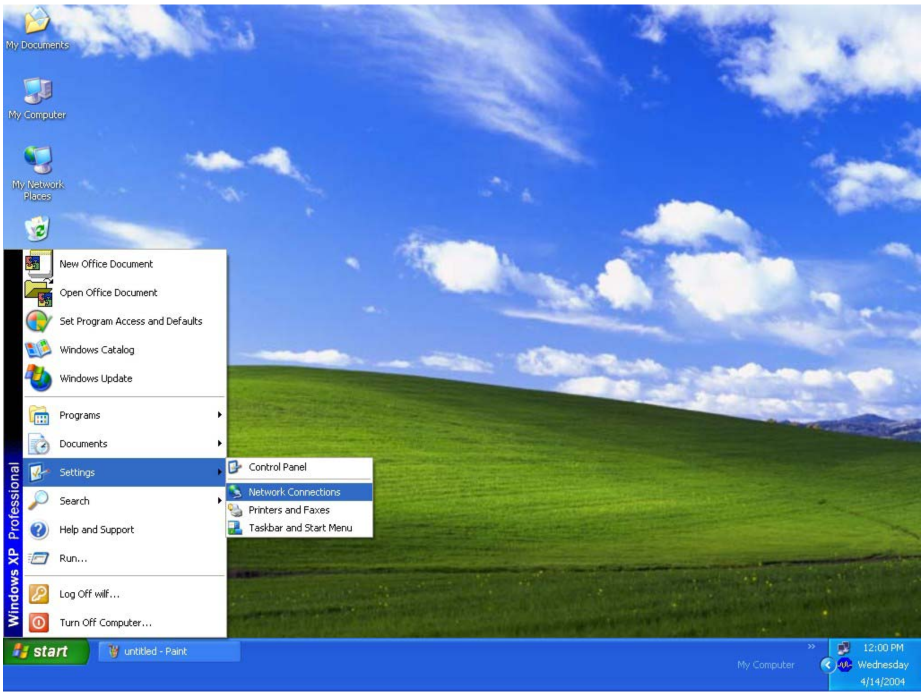
Note

If you are using this Router to provide Internet access for more than one computer, you can use these instructions later to change the IP settings for the other computers. However, you cannot use the same IP address since every computer must have its own IP address that is unique on the local network.

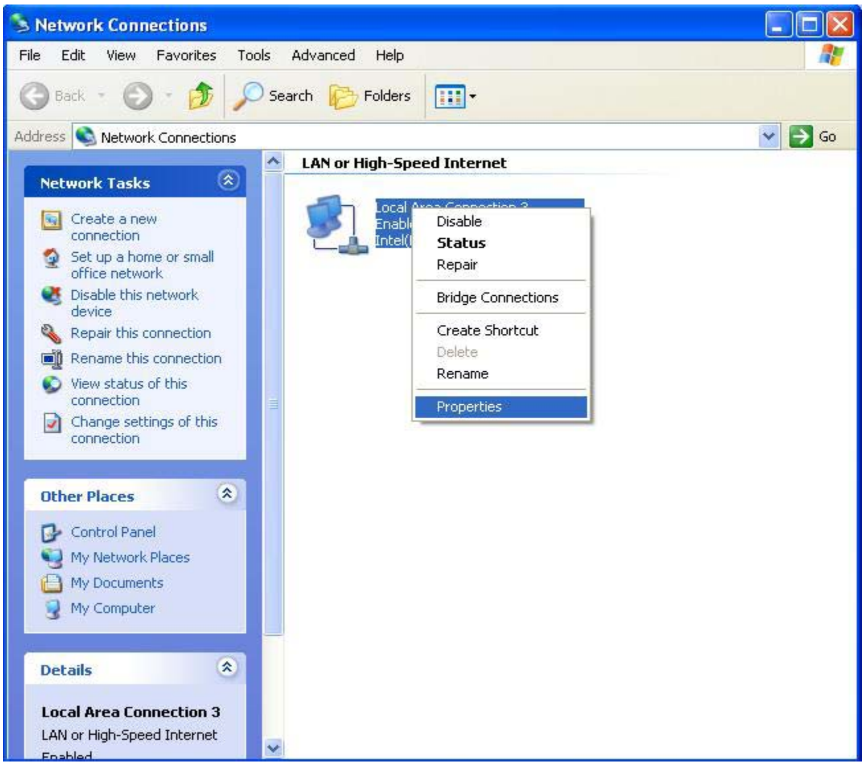
Configure Windows XP for DHCP

Use the following steps to configure a computer running Windows XP to be a DHCP client.

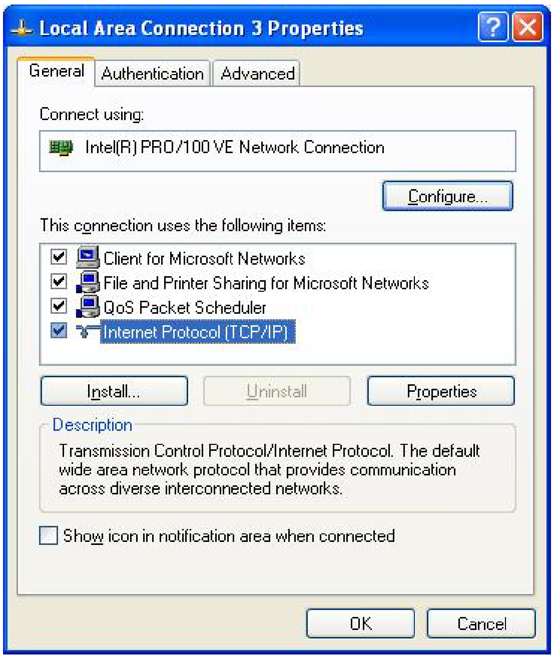
1. From the **Start** menu on your desktop, go to **Settings**, then click on **Network Connections**.



2. In the **Network Connections** window, right-click on **LAN** (Local Area Connection), then click **Properties**.



3. In the **General** tab of the **Local Area Connection Properties** menu, highlight **Internet Protocol (TCP/IP)** under "This connection uses the following items:" by clicking on it once. Click on the **Properties** button.


Local Area Connection 3 Properties
General Authentication Advanced
Configure...
Install... Uninstall Properties
OK Cancel

Connect using:

Intel(R) PRO/100 VE Network Connection

This connection uses the following items:

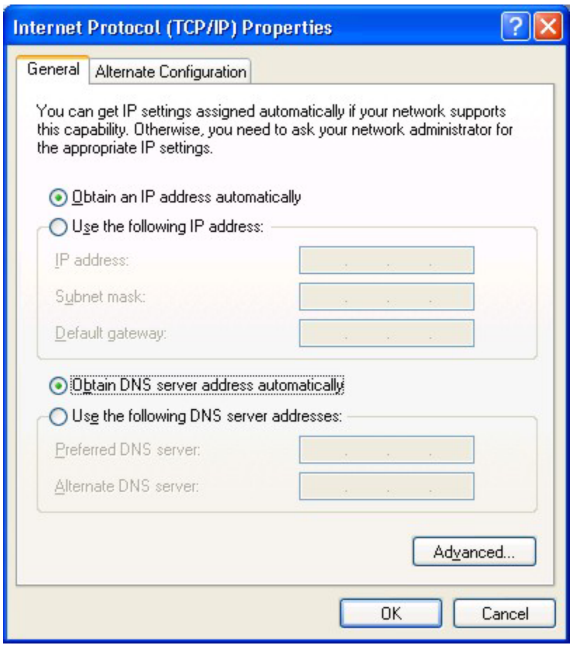
☑ Client for Microsoft Networks
☑ File and Printer Sharing for Microsoft Networks
☑ QoS Packet Scheduler
☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

□ Show icon in notification area when connected

4. Select "Obtain an IP address automatically" by clicking once in the circle. Click the **OK** button. Your computer is now ready to use the Router's DHCP server.


Internet Protocol (TCP/IP) Properties
General Alternate Configuration
Advanced...
OK Cancel

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:
IP address:
Subnet mask:
Default gateway:

● Obtain DNS server address automatically
○ Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:

Windows 2000

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows** task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then select **Properties**.
4. The **Local Area Connection Properties** dialog box displays with a list of currently installed network components. If the list includes Internet Protocol (TCP/IP), then the protocol has already been enabled, skip ahead to *Configure Windows 2000 for DHCP*.
5. If Internet Protocol (TCP/IP) does not display as an installed component, click **Install**.
6. In the **Select Network Component Type** dialog box, select **Protocol**, and then click **Add**.
7. Select **Internet Protocol (TCP/IP)** in the Network Protocols list, and then click **OK**.
8. You may be prompted to install files from your Windows 2000 installation CD or other media. Follow the instructions to install the files.
9. If prompted, click **OK** to restart your computer with the new settings.

Configure Windows 2000 for DHCP

1. In the Control Panel, double-click the **Network and Dial-up Connections** icon.
2. In **Network and Dial-up Connections** window, right-click the **Local Area Connection** icon, and then select **Properties**.
3. In the **Local Area Connection Properties** dialog box, select **Internet Protocol (TCP/IP)**, and then click **Properties**.
4. In the **Internet Protocol (TCP/IP) Properties** dialog box, click the button labeled **Obtain an IP address automatically**.
5. Double-click **OK** to confirm and save your changes, and then close the Control Panel.

Your computer is now ready to use the Router's DHCP server.

Windows 95 and Windows 98

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows** task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**. Double-click the **Network** icon.
2. The **Network** dialog box displays with a list of currently installed network components. If the list includes TCP/IP, and then the protocol has already been enabled, skip to *Configure IP Information Windows 95, 98*.
3. If TCP/IP does not display as an installed component, click **Add**. The **Select Network Component Type** dialog box displays.
4. Select **Protocol**, and then click **Add**. The **Select Network Protocol** dialog box displays.
5. Click on **Microsoft** in the Manufacturers list box, and then click **TCP/IP** in the Network Protocols list box.
6. Click **OK** to return to the Network dialog box, and then click **OK** again. You may be prompted to install files from your Windows 95/98 installation CD. Follow the instructions to install the files.
7. Click **OK** to restart the PC and complete the TCP/IP installation.

Configure Windows 95 and Windows 98 for DHCP

1. Open the **Control Panel** window, and then click the **Network** icon.
2. Select the network component labeled TCP/IP, and then click **Properties**.
3. If you have multiple TCP/IP listings, select the listing associated with your network card or adapter.
4. In the **TCP/IP Properties** dialog box, click the **IP Address** tab.
5. Click the **Obtain an IP address automatically** option.

6. Double-click **OK** to confirm and save your changes. You will be prompted to restart Windows.
7. Click **Yes**.

When it has restarted, your computer is ready to use the Router's DHCP server.

Windows ME

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows** task bar, click the **Star**t button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network and Dial-up Connections** icon.
3. In the **Network and Dial-up Connections** window, right-click the **Network** icon, and then select **Properties**.
4. The **Network Properties** dialog box displays with a list of currently installed network components. If the list includes Internet Protocol (TCP/IP), then the protocol has already been enabled. Skip ahead to *Configure Windows ME for DHCP*.
5. If Internet Protocol (TCP/IP) does not display as an installed component, click **Add**.
6. In the **Select Network Component Type** dialog box, select **Protocol**, and then click **Add**.
7. Select **Microsoft** in the Manufacturers box.
8. Select **Internet Protocol (TCP/IP)** in the Network Protocols list, and then click **OK**.
9. You may be prompted to install files from your Windows Me installation CD or other media. Follow the instructions to install the files.
10. If prompted, click **OK** to restart your computer with the new settings.

Configure Windows ME for DHCP

1. In the **Control Panel**, double-click the **Network and Dial-up Connections** icon.
2. In the **Network and Dial-up Connections** window, right-click the **Network** icon, and then select **Properties**.
3. In the **Network Properties** dialog box, select **TCP/IP**, and then click **Properties**.
4. In the **TCP/IP Settings** dialog box, click the **Obtain and IP address automatically** option.
5. Double-click **OK** twice to confirm and save your changes, and then close the Control Panel.

Your computer is now ready to use the Router's DHCP server.

Windows NT 4.0 Workstations

First, check for the IP protocol and, if necessary, install it:

1. In the **Windows NT** task bar, click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. In the **Control Panel** window, double-click the **Network** icon.
3. In the **Network** dialog box, click the **Protocols** tab.
4. The **Protocols** tab displays a list of currently installed network protocols. If the list includes TCP/IP, then the protocol has already been enabled. Skip to "Configure IP Information"
5. If TCP/IP does not display as an installed component, click **Add**.
6. In the **Select Network Protocol** dialog box, select **TCP/IP**, and then click **OK**. You may be prompted to install files from your Windows NT installation CD or other media. Follow the instructions to install the files.
7. After all files are installed, a window displays to inform you that a TCP/IP service called DHCP can be set up to dynamically assign IP information.
8. Click **Yes** to continue, and then click **OK** if prompted to restart your computer.

Configure Windows NT 4.0 for DHCP

1. Open the **Control Panel** window, and then double-click the **Network** icon.
2. In the **Network** dialog box, click the **Protocols** tab.
3. In the **Protocols** tab, select **TCP/IP**, and then click **Properties**.
4. In the **Microsoft TCP/IP Properties** dialog box, click the **Obtain an IP address automatically** option.

5. Click **OK** twice to confirm and save your changes, and then close the Control Panel.

Your computer is now ready to use the Router's DHCP server.

Access the Configuration Manager

Now that your computer's IP settings allow it to communicate with the Router, you can access the configuration software.

Note

Be sure that the web browser on your computer is not configured to use a proxy server in the Internet settings. In Windows Internet Explorer, you can check if a proxy server is enabled using the following procedure:

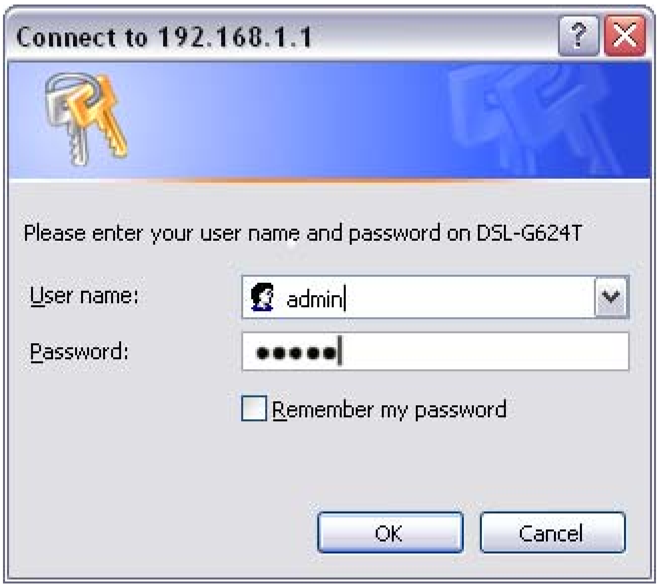
1. In Windows, click on the **Start** button, go to **Settings** and choose **Control Panel**.
2. In the **Control Panel** window, double-click on the **Internet Options** icon.
3. Click the **Connections** tab and click on the **LAN Settings** button.
4. Verify that the "Use proxy server" option is NOT checked. If it is checked, click in the checked box to deselect the option and click OK.

Alternatively, you can access this ***Internet Options*** *menu using the* ***Tools*** *pull-down menu in Internet Explorer.*

Login to Home Page

To use the web-based management software, launch a suitable web browser and direct it to the IP address of the Router. Type in **http://** followed by the default IP address, **192.168.1.1** in the address bar of the browser. The URL in the address bar should read: **http://192.168.1.1**.

A dialog box prompts for the User Name and Password. Type in the default User Name **admin** and default Password **admin** and click the **OK** button to access the web-based manager.



Connect to 192.168.1.1

Please enter your user name and password on DSL-G624T

User name: admin

Password: •••••

□ Remember my password

Enter Password

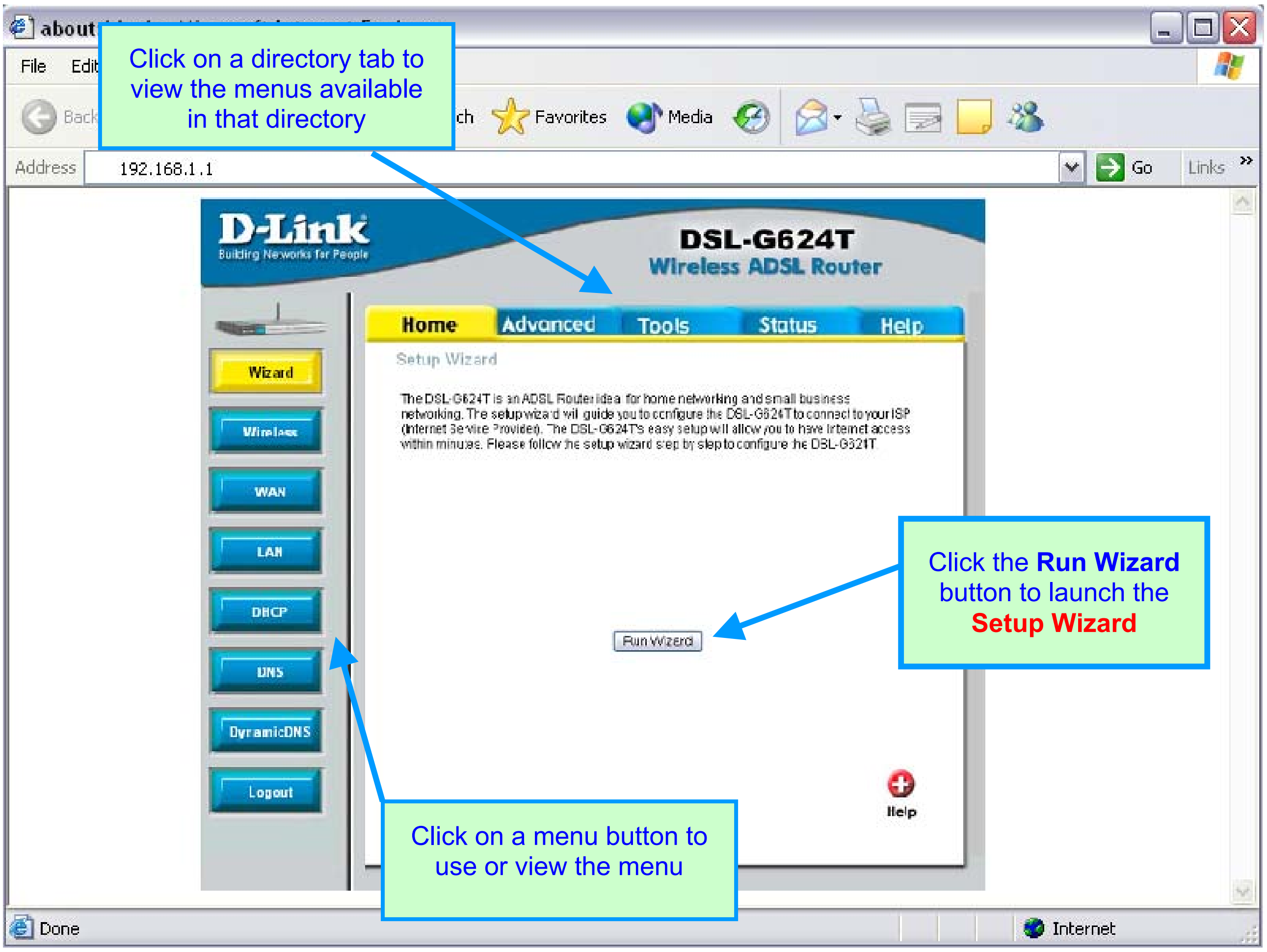
You should change the web-based manager access user name and password once you have verified that a connection can be established. The user name and password allows any PC within the same subnet as the Router to access the web-based manger.

Note

The user name and password used to access the web-based manager is NOT the same as the ADSL account user name and password needed for PPPoE/PPPoA connections to access the Internet.

Configure the Router

When you successfully connect to the web manager, the **Home** directory tab will display the **Setup Wizard** menu. You can launch the Setup Wizard from this page or use the menu buttons located in the left panel of the web page to view other menus used for basic configuration.



Setup Wizard

The DSL-G624T is an ADSL Router idea for home networking and small business networking. The setup wizard will guide you to configure the DSL-G624T to connect to your ISP (Internet Service Provided). The DSL-G624T's easy setup will allow you to have Internet access within minutes. Please follow the setup wizard step by step to configure the DSL-G624T.

Click on a directory tab to view the menus available in that directory

Click the **Run Wizard** button to launch the **Setup Wizard**

Click on a menu button to use or view the menu

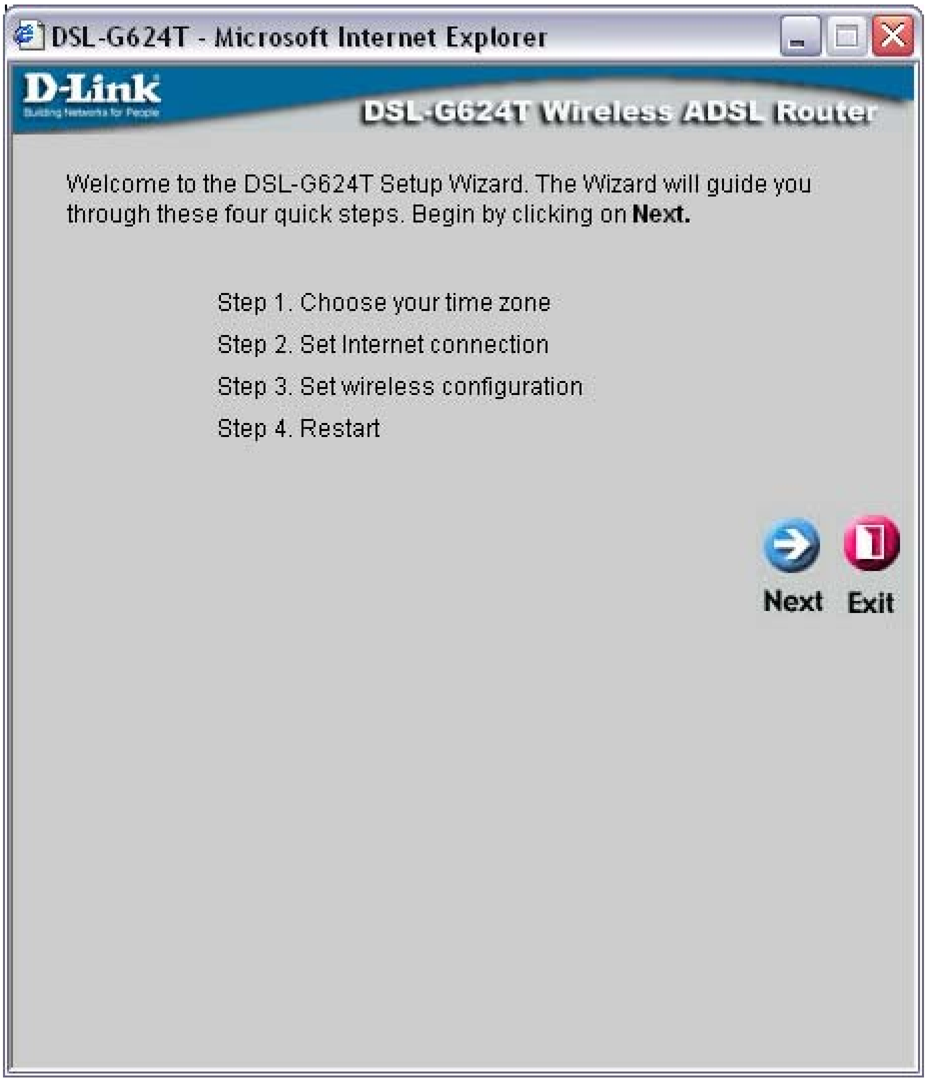
Web Manager – First Time Log On

All configuration and management of the Router is done using the web-based management interface pictured in the above example. The various menus are accessed by clicking on one of the directory tabs, **Home**, **Advanced**, **Tools**, **Status** and **Help**. Each tab displays menu buttons located in the left hand panel of the web interface. Basic setup of the Router can be completed in the menus accessed from the Home directory. The menus accessed from the Home directory include the following: Setup **Wizard**, **Wireless** Settings used to configure the 802.11g wireless access point, **WAN** Settings used to configure the Internet connection, **LAN** Settings used to configure the **Management IP** address for the Router, **DHCP** Settings for automatic assignment of IP addresses used by workstations or servers on your LAN, and the **DNS** Configuration menu used for setting up DNS relay and Dymaic DNS for setting the DDNS settings..

Using the Setup Wizard

To use the Setup Wizard, click the **Run Wizard** button in the first browser window and follow the instructions in the pop-up dialog box that appears.

The initial dialog box summarizes the setup process. Click the **Next** button to proceed. You may stop using the Setup Wizard at any time by clicking the **Exit** button. If you exit the wizard you will return to the Setup Wizard page without saving any of the settings changed during the process.


DSL-G624T - Microsoft Internet Explorer
D-Link
Building Networks for People
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Next
Exit

Welcome to the DSL-G624T Setup Wizard. The Wizard will guide you through these four quick steps. Begin by clicking on **Next.**

Step 1. Choose your time zone

Step 2. Set Internet connection

Step 3. Set wireless configuration

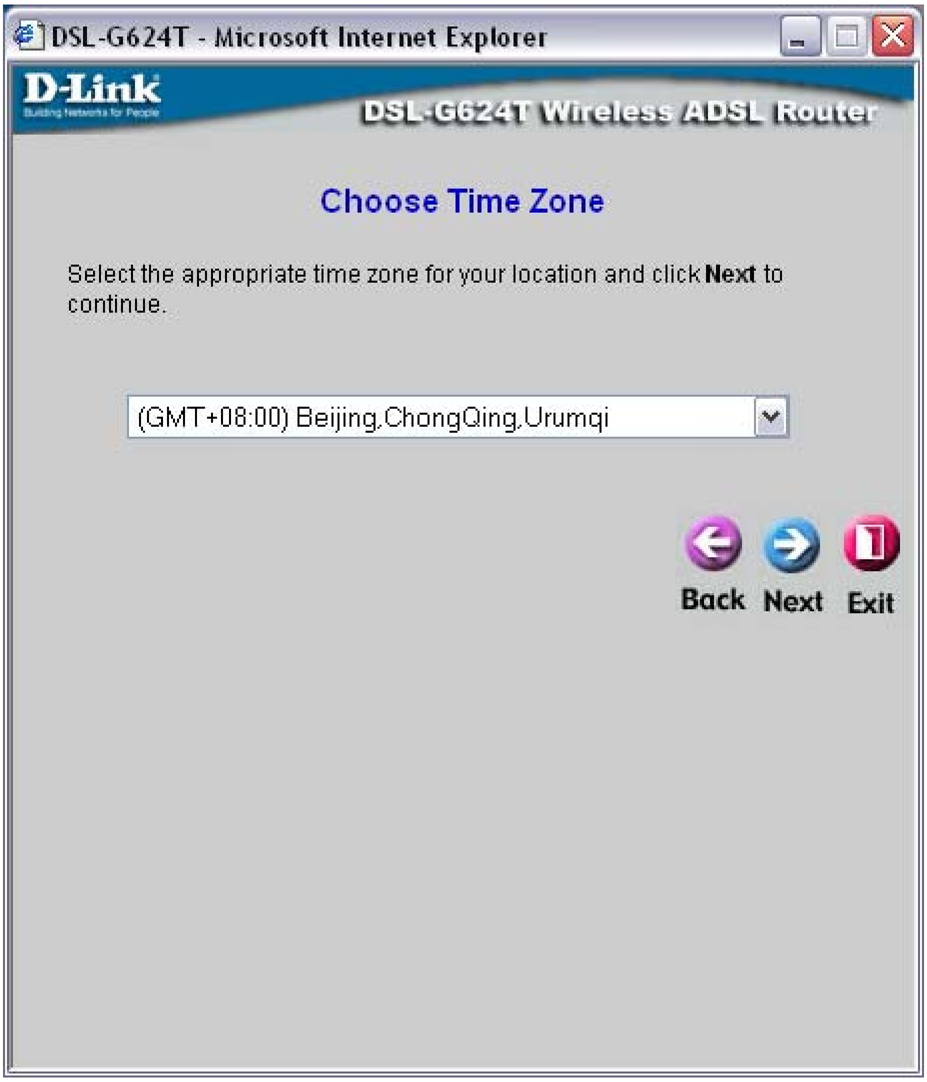
Step 4. Restart

The first window of the Setup Wizard lists the basic steps in the process. These steps are as follows:

1. Set the system time.
2. Configure the connection to the Internet.
3. Save the new configuration settings and reboot the system.

Using the Setup Wizard - Choose Time Zone

Choose the time zone you are in from the pull-down menu and click **Next**. This sets the system time used for the Router. If you wish to return to the previous menu during the setup process, click the **Back** button.



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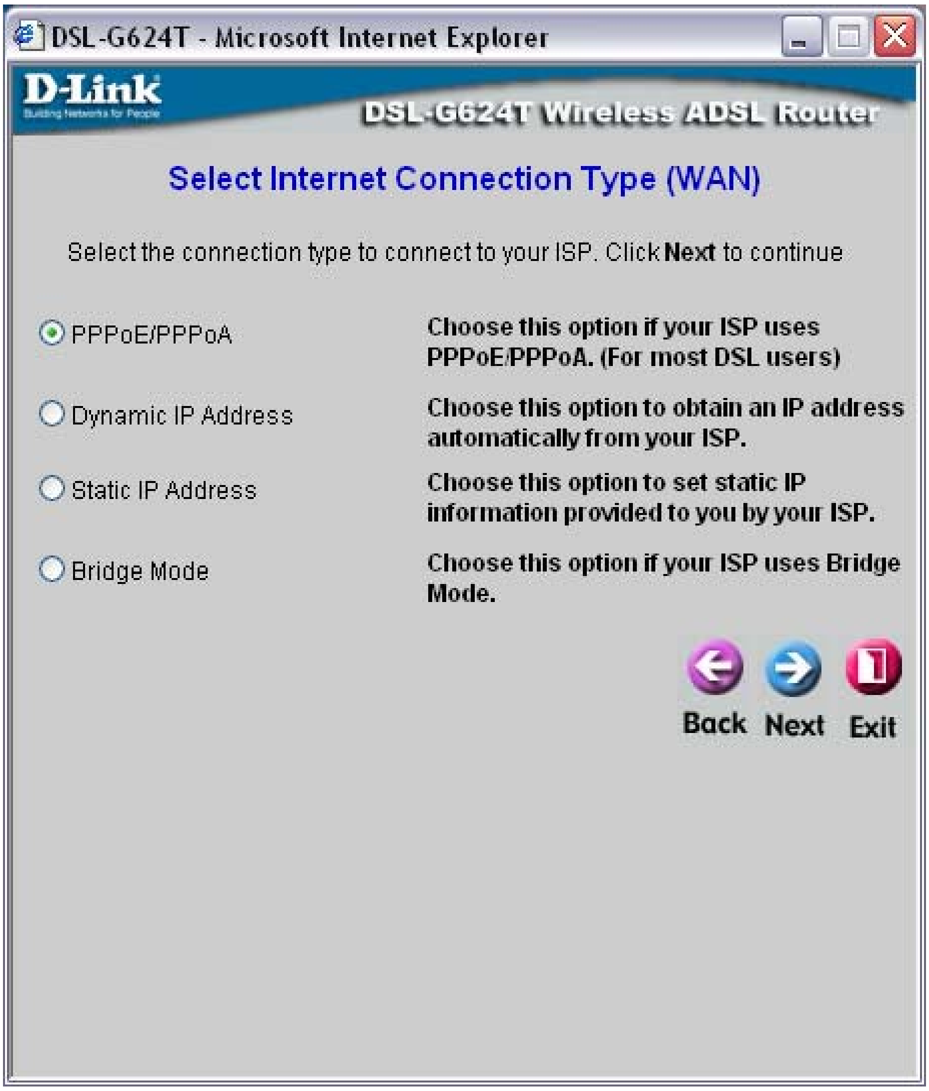
Choose Time Zone

Select the appropriate time zone for your location and click **Next** to continue.

(GMT+08:00) Beijing,ChongQing,Urumqi

Using the Setup Wizard - Choose Connection Type

Now select the Connection Type used for the Internet connection. Your ISP has given this information to you. The connection types available in the Setup Wizard menu are **PPPoE/PPPoA**, **Dynamic IP Address**, **Static IP Address** and **Bridge Mode**. Each connection type has different settings that are configured in the next dialog box of the Setup wizard.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Select Internet Connection Type (WAN)

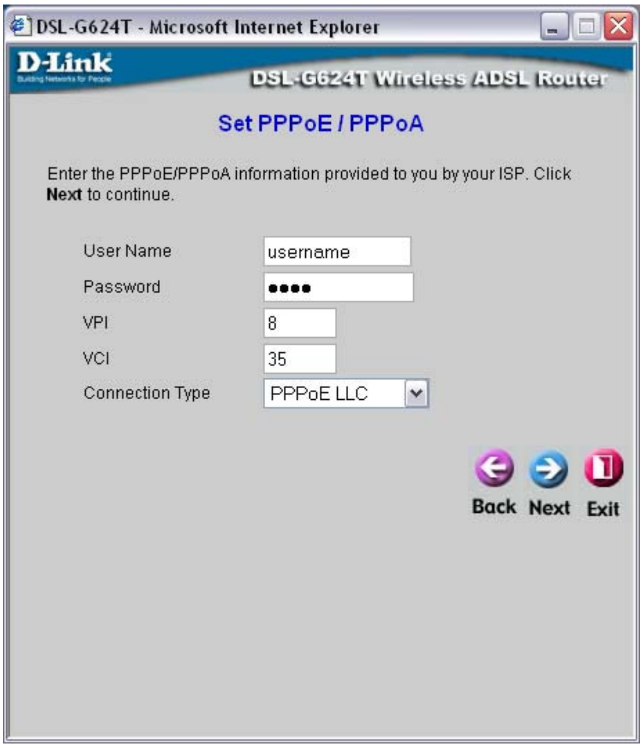
Select the connection type to connect to your ISP. Click **Next** to continue

● PPPoE/PPPoA	Choose this option if your ISP uses PPPoE/PPPoA. (For most DSL users)
○ Dynamic IP Address	Choose this option to obtain an IP address automatically from your ISP.
○ Static IP Address	Choose this option to set static IP information provided to you by your ISP.
○ Bridge Mode	Choose this option if your ISP uses Bridge Mode.

Select the **Connection Type** specific to your service and click **Next** to go to the next Setup Wizard menu. Follow the instructions below for the type of connection you have selected.

Using the Setup Wizard - For PPPoE/PPPoA connections:

1. Type in the **Username** and **Password** used to identify and verify your account to the ISP.
2. Select the specific **Connection Type** from the drop-down menu. The available PPP connection and encapsulation types are *PPPoE LLC*, *PPPoA LLC* and *PPPoA VC-MUX*.
3. If you are instructed to change the **VPI** or **VCI** number, type in the correct setting in the available entry fields. Most users will not need to change these settings. The Internet connection cannot function if these values are incorrect.
4. Click **Next** to go to the next menu, which is the **Set Wireless LAN Connection** window. Here the user can set the parameters for the wireless settings for the Router. Enter the SSID and choose the correct wireless channel.
5. Once completed, click **Next** to go the Setup Completed window.



DSL-G624T - Microsoft Internet Explorer

Set PPPoE / PPPoA

Enter the PPPoE/PPPoA information provided to you by your ISP. Click **Next** to continue.

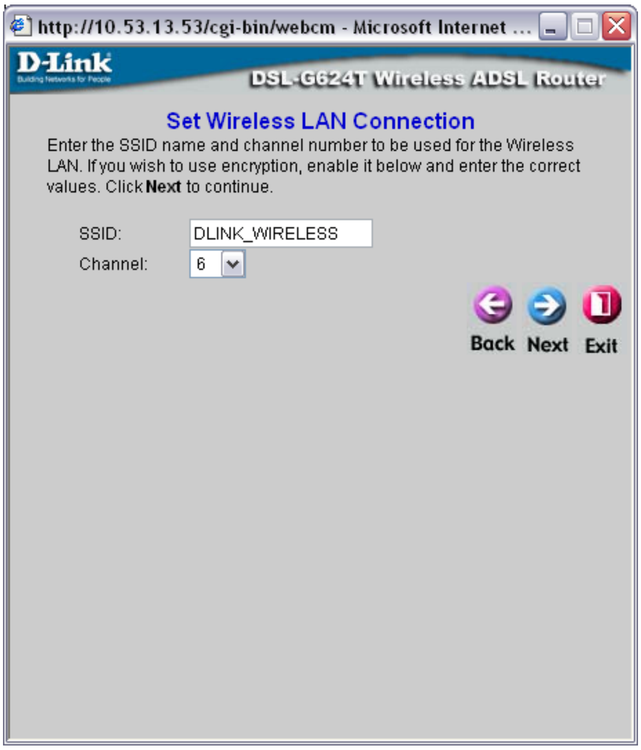
User Name: username

Password: ●●●●

VPI: 8

VCI: 35

Connection Type: PPPoE LLC



http://10.53.13.53/cgi-bin/webcm - Microsoft Internet ...

Set Wireless LAN Connection

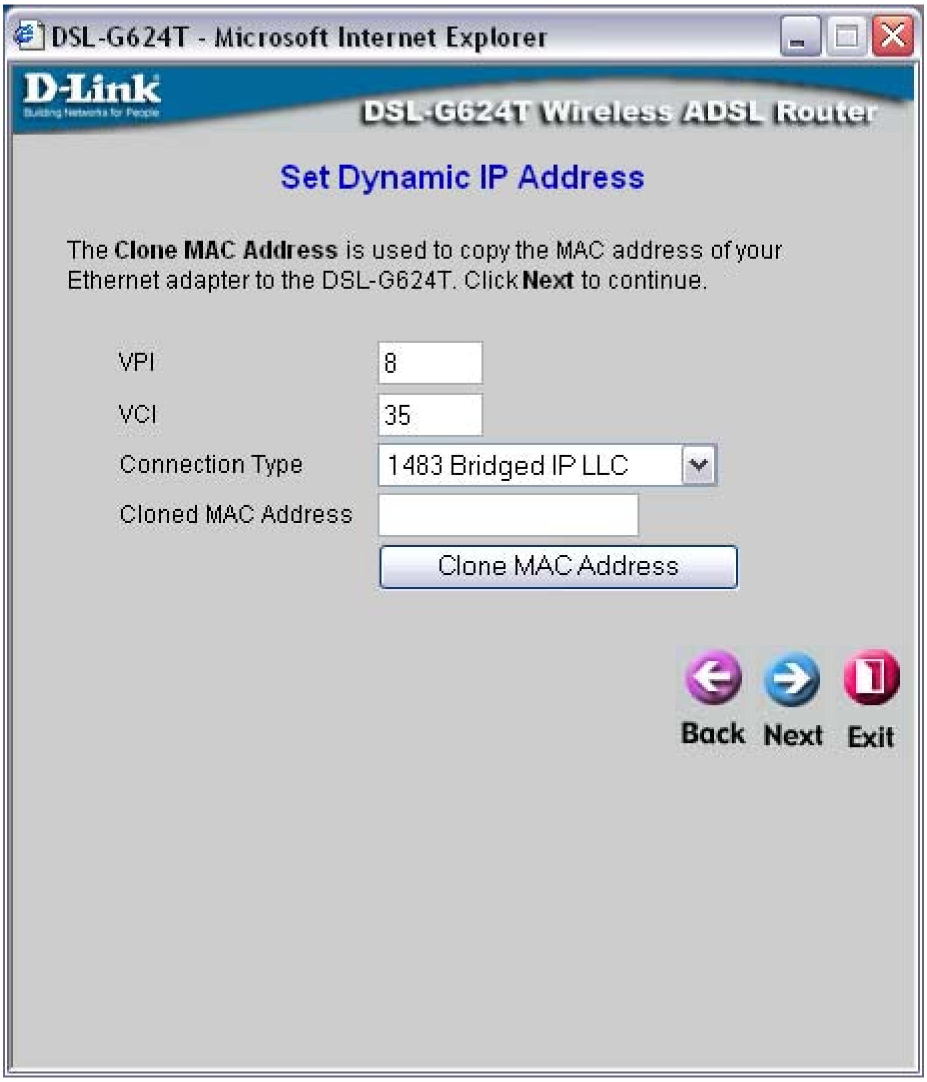
Enter the SSID name and channel number to be used for the Wireless LAN. If you wish to use encryption, enable it below and enter the correct values. Click **Next** to continue.

SSID: DLINK_WIRELESS

Channel: 6

Using the Setup Wizard - For Dynamic IP Address connections:

1. Select the specific **Connection Type** from the drop-down menu. The available Dynamic IP Address connection and encapsulation types are *1483 Bridged IP LLC* and *1483 Bridged IP VC-MUX*.
2. If you are instructed to change the **VPI** or **VCI** number, type in the correct setting in the available entry fields. Most users will not need to change these settings. The Internet connection cannot function if these values are incorrect.
3. You may want to copy the MAC address of your Ethernet adapter to the Router. Some ISPs record the unique MAC address of your computer's Ethernet adapter when you first access their network. This can prevent the Router (which has a different MAC address) from being allowed access to the ISPs network (and the Internet). To clone the MAC address of your computer's Ethernet adapter, type in the MAC address in the Cloned MAC Address field and click the **Clone MAC Address** button. This will copy the information to a file used by the Router to present to the ISP's server used for DHCP.
4. Click **Next** to go to the next menu and complete the setup wizard.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Set Dynamic IP Address

The **Clone MAC Address** is used to copy the MAC address of your Ethernet adapter to the DSL-G624T. Click **Next** to continue.

VPI: 8

VCI: 35

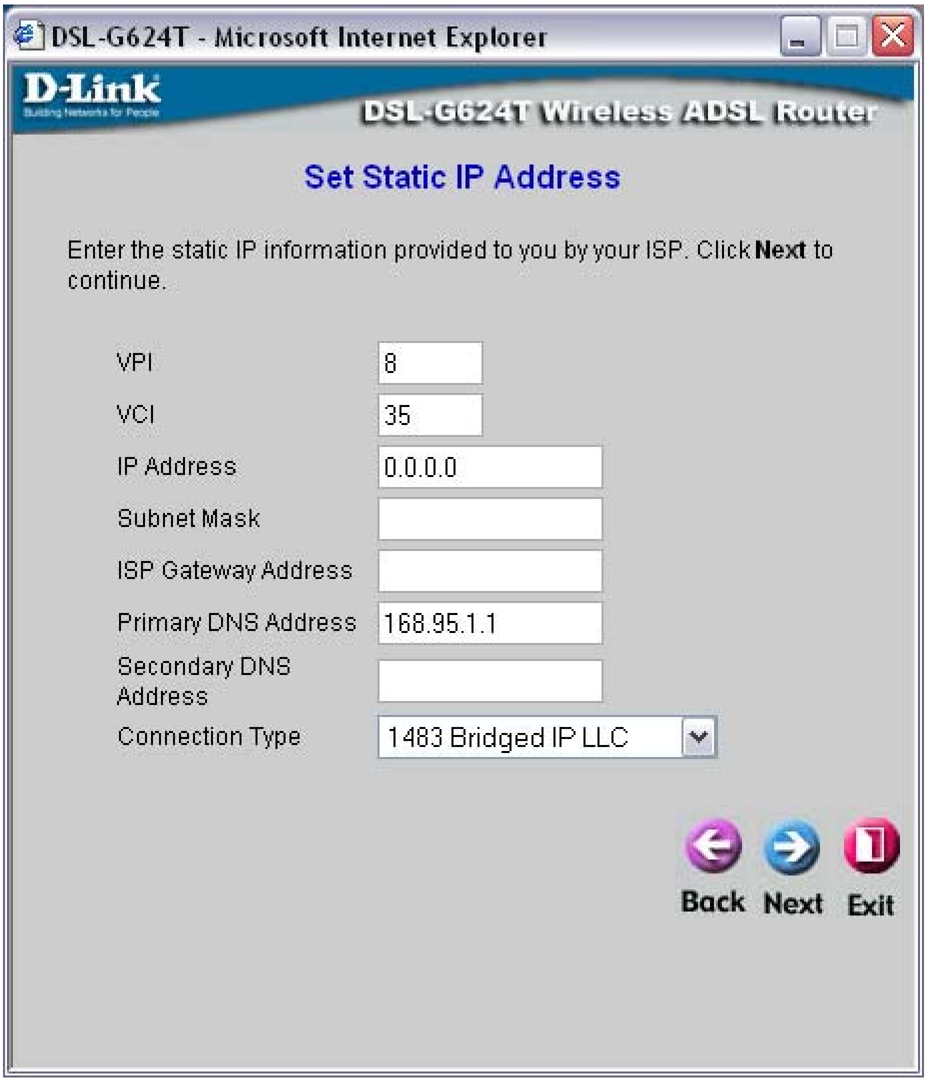
Connection Type: 1483 Bridged IP LLC

Cloned MAC Address:

Clone MAC Address
Back
Next
Exit

Using the Setup Wizard - For Static IP Address connections:

1. Select the specific **Connection Type** from the drop-down menu. The available Static IP Address connection and encapsulation types are *1483 Bridged IP LLC*, *1483 Bridged IP VC-MUX*, *1483 Routed IP LLC*, *1483 Routed IP VC-MUX* and *IPoA*.
2. Change the **IP Address**, **Subnet Mask**, **ISP Gateway Address**, **Primary DNS** and **Secondary DNS** Server IP address as instructed by your ISP. For IPoA connections it may also be necessary to change the **ARP Server Address**. IPoA connection users who have not been given this information should leave the field blank.
3. If you are instructed to change the **VPI** or **VCI** number, type in the correct setting in the available entry fields. Most users will not need to change these settings. The Internet connection cannot function if these values are incorrect.
4. Click **Next** to go to the next menu and complete the setup wizard.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Back
Next
Exit

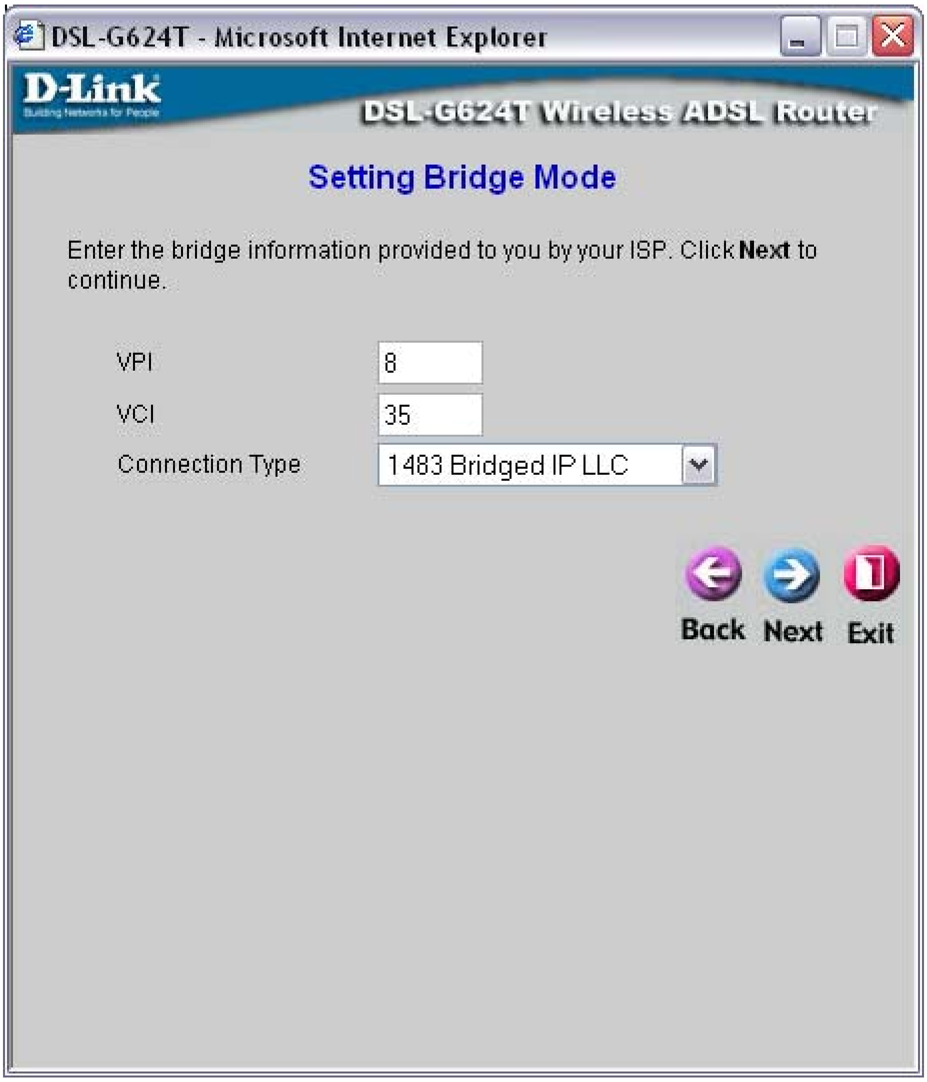
Set Static IP Address

Enter the static IP information provided to you by your ISP. Click **Next** to continue.

VPI	8
VCI	35
IP Address	0.0.0.0
Subnet Mask	
ISP Gateway Address	
Primary DNS Address	168.95.1.1
Secondary DNS Address	
Connection Type	1483 Bridged IP LLC

Using the Setup Wizard - For Bridge Mode connections:

1. Select the specific **Connection Type** from the drop-down menu. The available Bridge Mode connection and encapsulation types are *1483 Bridged IP LLC* and *1483 Bridged IP VC-MUX*.
2. If you are instructed to change the **VPI** or **VCI** number, type in the correct setting in the available entry fields. Most users will not need to change these settings. The Internet connection cannot function if these values are incorrect.
3. Click **Next** to go to the next menu and complete the setup wizard.



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Back
Next
Exit

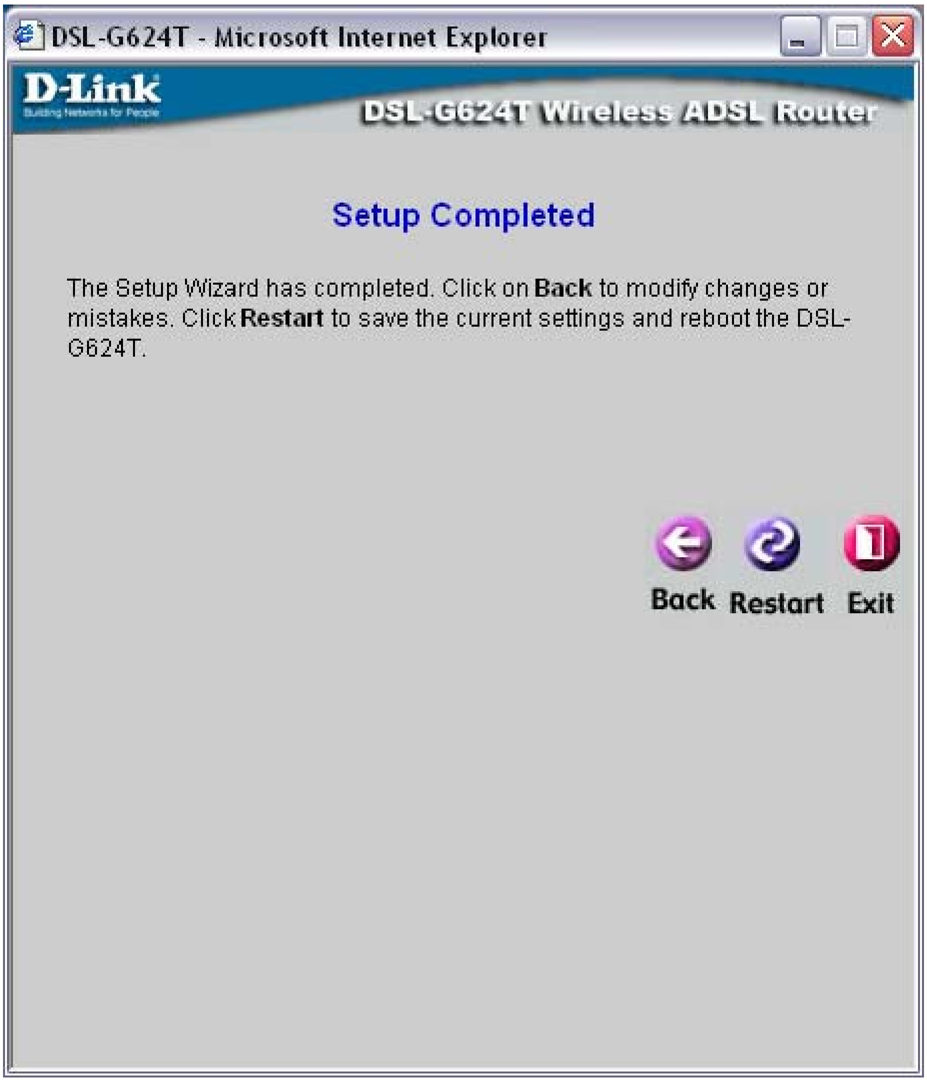
Setting Bridge Mode

Enter the bridge information provided to you by your ISP. Click **Next** to continue.

VPI	8
VCI	35
Connection Type	1483 Bridged IP LLC

Using the Setup Wizard - Finish and Restart

Finally you can confirm that the setup process is completed. If you are satisfied that you have entered all the necessary information correctly, click the **Restart** button to save the new configuration settings and restart the Router. If you need to change settings from a previous menu, click the **Back** button.



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Setup Completed

The Setup Wizard has completed. Click on **Back** to modify changes or mistakes. Click **Restart** to save the current settings and reboot the DSL-G624T.

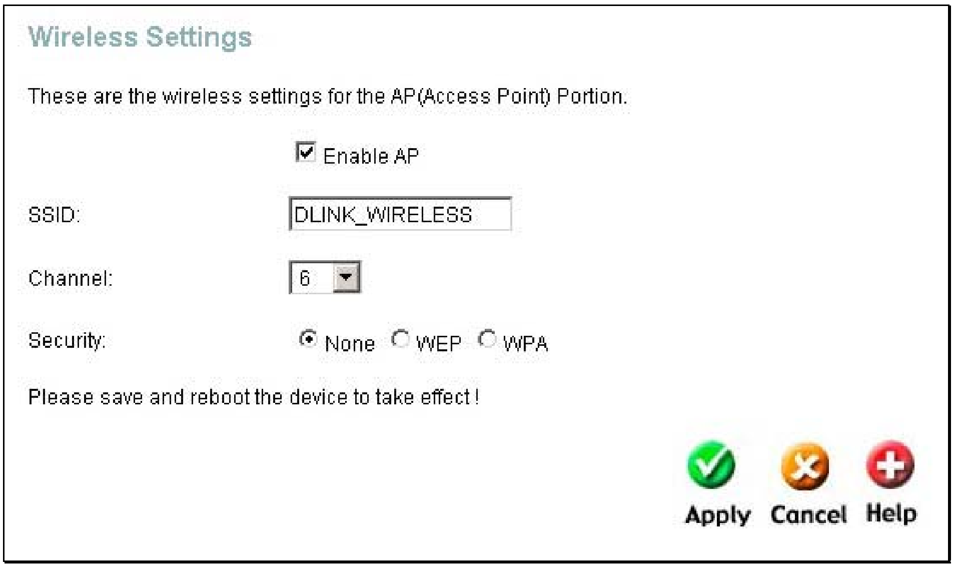
Do not turn the Router off while it is restarting. When it is finished restarting a dialog box appears informing you that the changes have been saved and the Router was restarted. Click **Close** to close the box and continue to configure the Router as desired. You may want to test the WAN connection by accessing the Internet with your browser.

Home

This tab in the Web Manager will allow the user to set up various configurations in order to connect your Router to the Internet. Much of the information necessary in these screens must be supplied to you by your ISP. Remember to use the key words in bold when asking your ISP for information. This will make your ISP's job easier and therefore your configuration of the modem, much simpler and quicker. Screens to configure under the **Home** tab include **Wizard**, **Wireless**, **WAN**, **LAN**, **DHCP, DNS** and **Dynamic DNS**.

Wireless LAN Setup

The two essential settings for wireless LAN operation are the SSID and Channel Number. The SSID (Service Set Identifier) is used to identify a group of wireless LAN components. Use the Wireless Settings menu to configure these basic settings. Wireless security using encryption (WEP) or access limitation (WPA) are also configured with the Wireless Settings method. Read more below about setting up security for Wireless LAN.



Wireless Settings

These are the wireless settings for the AP(Access Point) Portion.

☑ Enable AP

SSID: DLINK_WIRELESS

Channel: 6

Security: ● None ○ WEP ○ WPA

Please save and reboot the device to take effect !

Wireless Settings menu

Configure Basic Wireless Settings

Follow the instructions below to change basic wireless settings.

1. **To disable the wireless interface**: click in the **Enable AP** check box to remove the check mark and click the **Apply** button. This will immediately disable the wireless access point, it is not necessary to restart the access point to make this change.

2. **If the wireless interface has been disabled:** click the **Enable AP** check box to place a check mark in it. Click the **Apply** button. It is not necessary to restart the access point unless you have also changed the channel or SSID.

3. The **SSID** can be changed to suit your wireless network. Remember that any wireless device using the access point must have the same SSID and use the same channel. The SSID can be a continuous character string (i.e. no spaces) of up to 16 characters in length. To disable SSID sharing (SSID broadcast), click to slect the Hidden SSID box. Click the **Apply** button to save any change to the SSID. A hidden SSID makes it more difficult for wireless clients to join or leave the SSID as they must be manually configured to join.

4. The **Channel:** may be changed to channels that are available in your region. Channels available for wireless LAN communication are subject to regional and national regulation. Click the **Apply** button to save any change to the Channel.

5. Make sure you save the new wireless settings. Use the System Settings menu to save the new settings.

Wireless Security

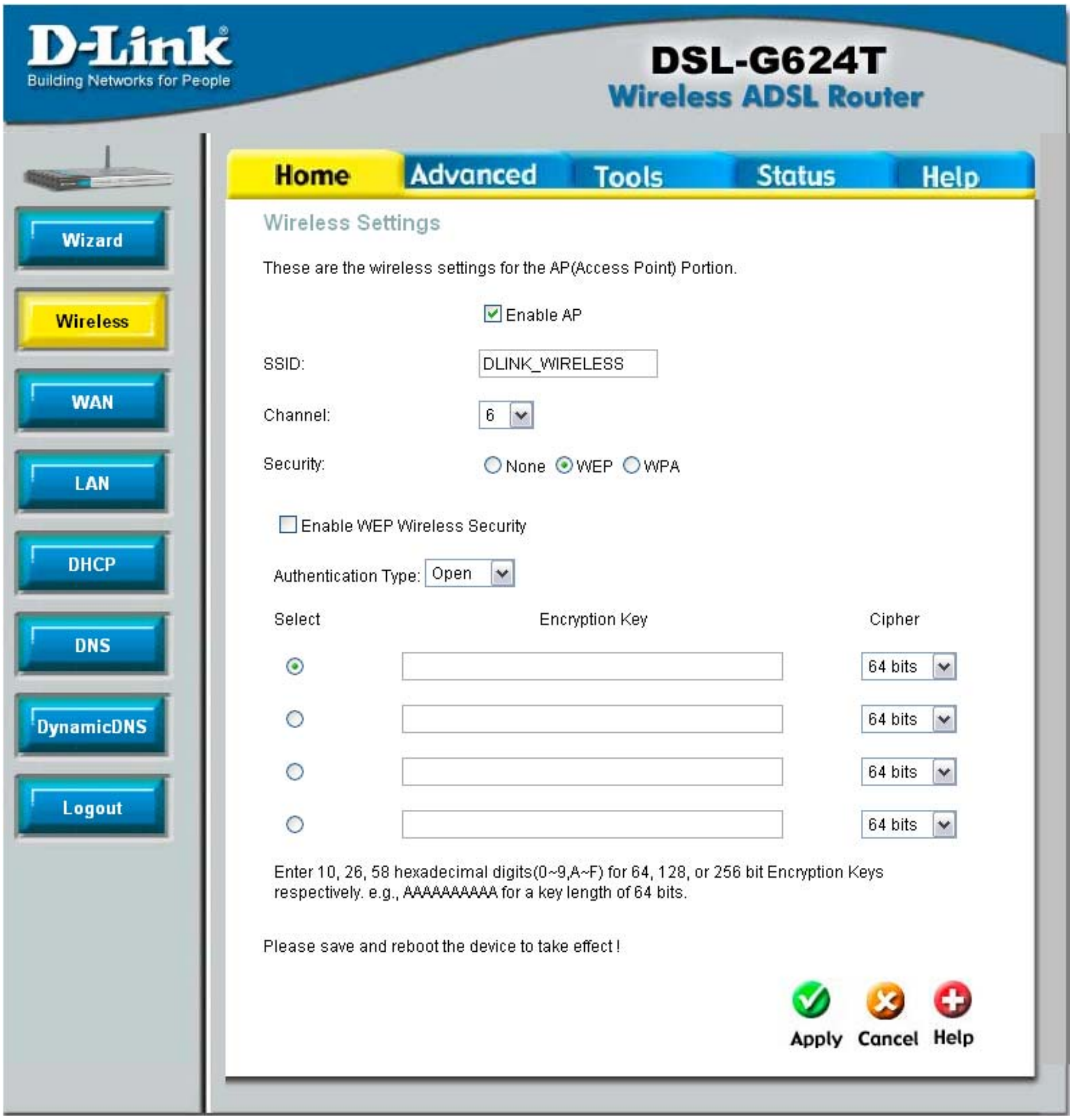
The wireless LAN interface of the DSL-G624T has various security features used to limit access to the device or to encrypt data and shared information. The available standardized security for wireless LAN includes WEP and WPA Wireless security is configured with the **Wireless Settings** menu located in the **Home** directory.

Note

Before enabling any security function for wireless operation, it is recommended to be sure the access point is working effectively. If possible, test the wireless interface to be sure stations are able to associate with the DSL-G624T before changing security settings. When you have successfully tested the AP, change the wireless security settings on the DSL-G624T before making the changes to clients.

Security Options for Wireless

In the Wireless Settings menu, select the type of security you want to configure. The menu will change to present the settings specific to the method being configured. The Router's wireless security options include three levels of WEP encryption and WPA for IEEE 802.1x network authentication or WPA with a user configured Pre Shared Key (PSK).



Wireless Settings

These are the wireless settings for the AP(Access Point) Portion.

☑ Enable AP

SSID: DLINK_WIRELESS

Channel: 6

Security: ○ None ● WEP ○ WPA

□ Enable WEP Wireless Security

Authentication Type: Open

Select	Encryption Key	Cipher
●		64 bits
○		64 bits
○		64 bits
○		64 bits

Enter 10, 26, 58 hexadecimal digits(0~9,A~F) for 64, 128, or 256 bit Encryption Keys respectively. e.g., AAAAAAAAAA for a key length of 64 bits.

Please save and reboot the device to take effect !

Configure WEP Wireless Security

WEP Encryption

WEP (Wireless Encryption Protocol or Wired Equivalent Privacy) encryption can be enabled for security and privacy. WEP encrypts the data portion of each frame transmitted from the wireless adapter using one of the predefined keys. Decryption of the data contained in each packet can only be done if the both the receiver and transmitter have the correct key.

WEP is disabled by default. To enable **WEP**, select the **Enable WEP Wireless Security** option. Configure the Encryption Keys as desired and click the **Apply** button. The encryption key setup is described below.

WEP can use open or shared keys, or may be configured to allow the clients to use either type of key. Use the **Authentication Type:** drop-down menu to choose **Open**, **Shared** or **Both**.

- Select **Open** to allow any wireless station to associate with each other through the access point. Wireless devices will be able to communicate with all devices on a network unless they require the a Shared key.
- Select **Shared** to only allow stations using a shared key encryption to associate with each other through the access point. That is, only devices with the same key are allowed to communicate over a network with devices that share the same key. Shared key requires additional configuration of the keys to be used. Follow the instructions below to configure the Shared Keys.
- Select **Both** if you want to allow Wireless clients to specify using a shared or open key.

Setup Encryption Keys

WEP Keys may be configured using **Hex** or **ASCII** characters. In addition there are three levels of encryption available, each level requires a different number of characters. Select **Hex** or **ASCII** from the **Key Type** drop-down menu. Hex or Hexadecimal digits are defined as the numerical digits 0 – 9 and the letters A – F (upper and lower case are recognized as the same digit). ASCII characters include numbers and letters but no spaces. An upper case ASCII character is NOT recognized as the same lower case character, and therefore must be configured exactly as typed for all wireless nodes using the access point. The length of the key depends on the level of encryption used.

Select the **Key Length** from the drop-down menu. The available key lengths are 64, 128 or 256-bit encryption. In the spaces provided, type in **Key 1**, **Key 2**, **Key 3** and **Key 4**. The length of the character string used of the keys depends on the level (Key Length) of encryption selected. Only one key can be active. The active key is selected by clicking the radio button for the key you want to use.

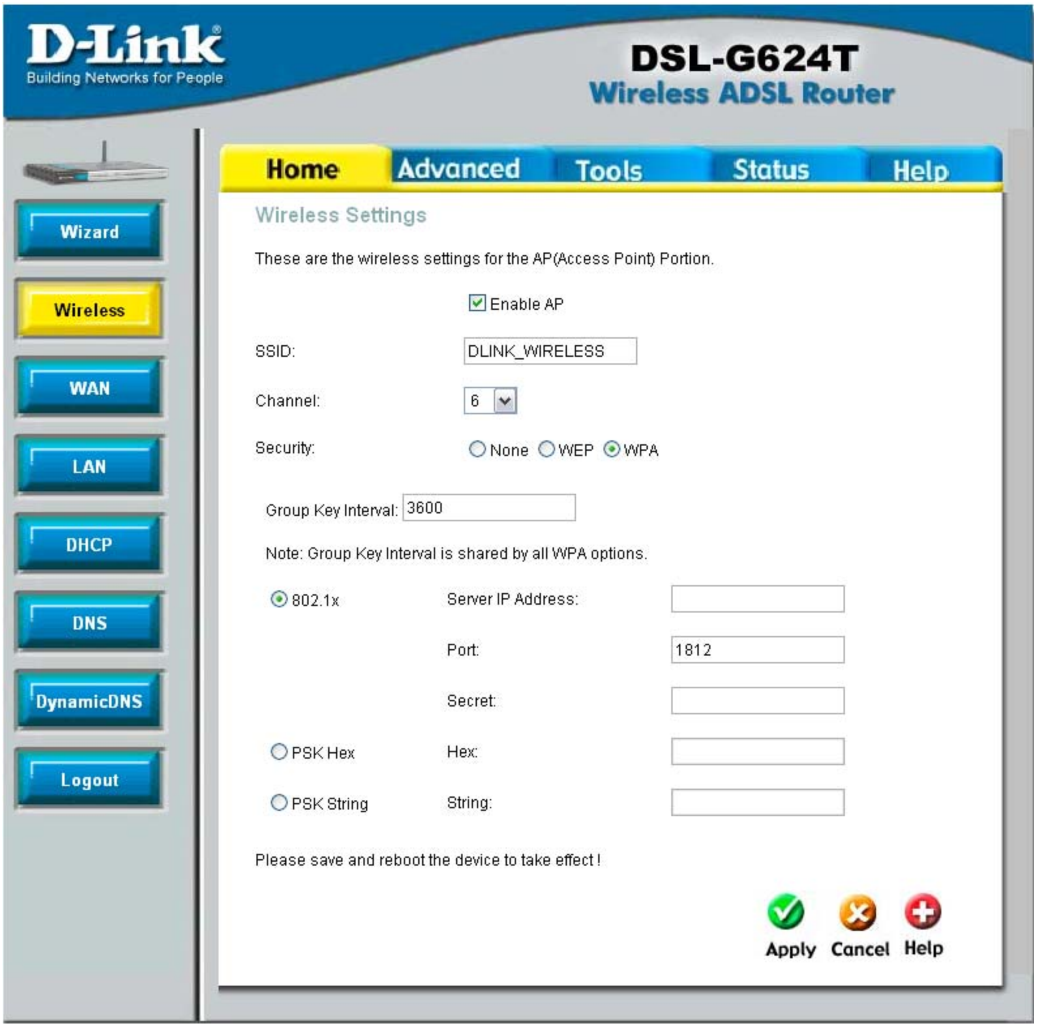
Click the **Apply** button when you have configured WEP as desired to put the changes into effect.

Note

Keep in mind that encryption, particularly at higher levels (i.e. 256-bit) can adversely affect thoughput. If your network has very high volume wireless traffic you may want to consider adding more carrying capacity or decreasing the level of encryption.

Configure WPA Settings

WPA security for wireless communication has been developed to overcome some of the shortcomings of WEP. WPA uses an improved encryption method combined with an authentication procedure.



Wireless Settings

These are the wireless settings for the AP(Access Point) Portion.

☑ Enable AP

SSID: DLINK_WIRELESS

Channel: 6

Security: ○ None ○ WEP ● WPA

Group Key Interval: 3600

Note: Group Key Interval is shared by all WPA options.

● 802.1x Server IP Address:

Port: 1812

Secret:

○ PSK Hex Hex:

○ PSK String String:

Please save and reboot the device to take effect !

Configure WPA Security for WLAN

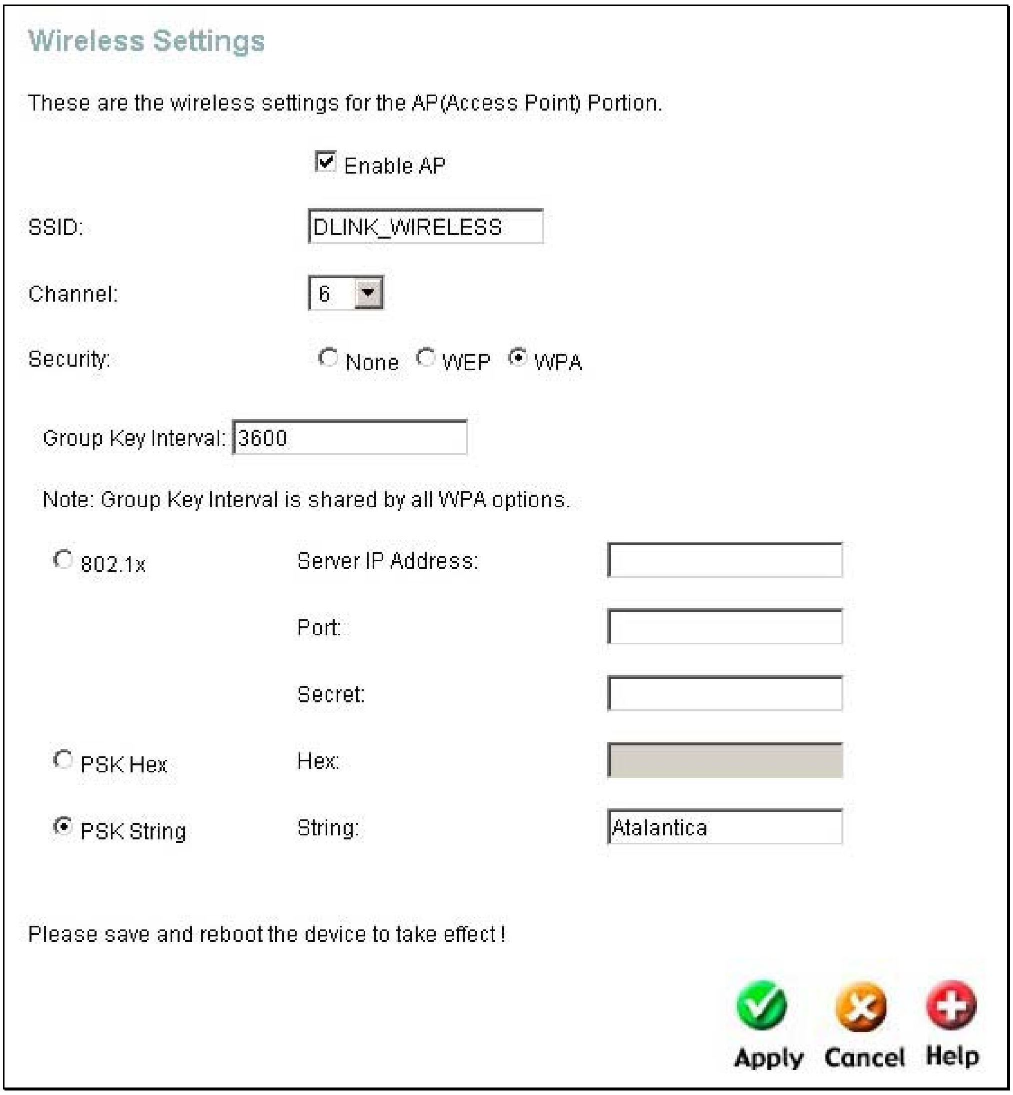
To configure WPA settings, select the **WPA** option. The menu will change to offer the appropriate settings.

WPA can be configured to work with **802.1x** network authentication, or to use a **PSK Hex** or **PSK String** key. Follow the instruction below according to the authentication method used. All the WPA methods require the **Group Key Interval** update. The default is 60 seconds. To change this type in the desired number of seconds to define the time interval between key changes foe WPA clients.

To use WPA with 802.1x:

1. Select the **802.1x** option.
2. Type in the **Server IP Address** field for the RADIUS server used for authentication.
3. Change the **Port:** if necessary, type in the password in the shared **Secret** field and change the **Group Key Interval** as desired.
4. Click the **Apply** button to put the changes into effect. Remember to save the settings using the System Settings menu.

WPA-PSK requires a shared key but does not use a separate server for authentication. PSK keys can be ASCII or Hex type.



Wireless Settings

These are the wireless settings for the AP(Access Point) Portion.

☑ Enable AP

SSID: DLINK_WIRELESS

Channel: 6

Security: ○ None ○ WEP ● WPA

Group Key Interval: 3600

Note: Group Key Interval is shared by all WPA options.

○ 802.1x Server IP Address:

Port:

Secret:

○ PSK Hex Hex:

● PSK String String: Atalantica

Please save and reboot the device to take effect !

Configure WPA-PSK Security for WLAN

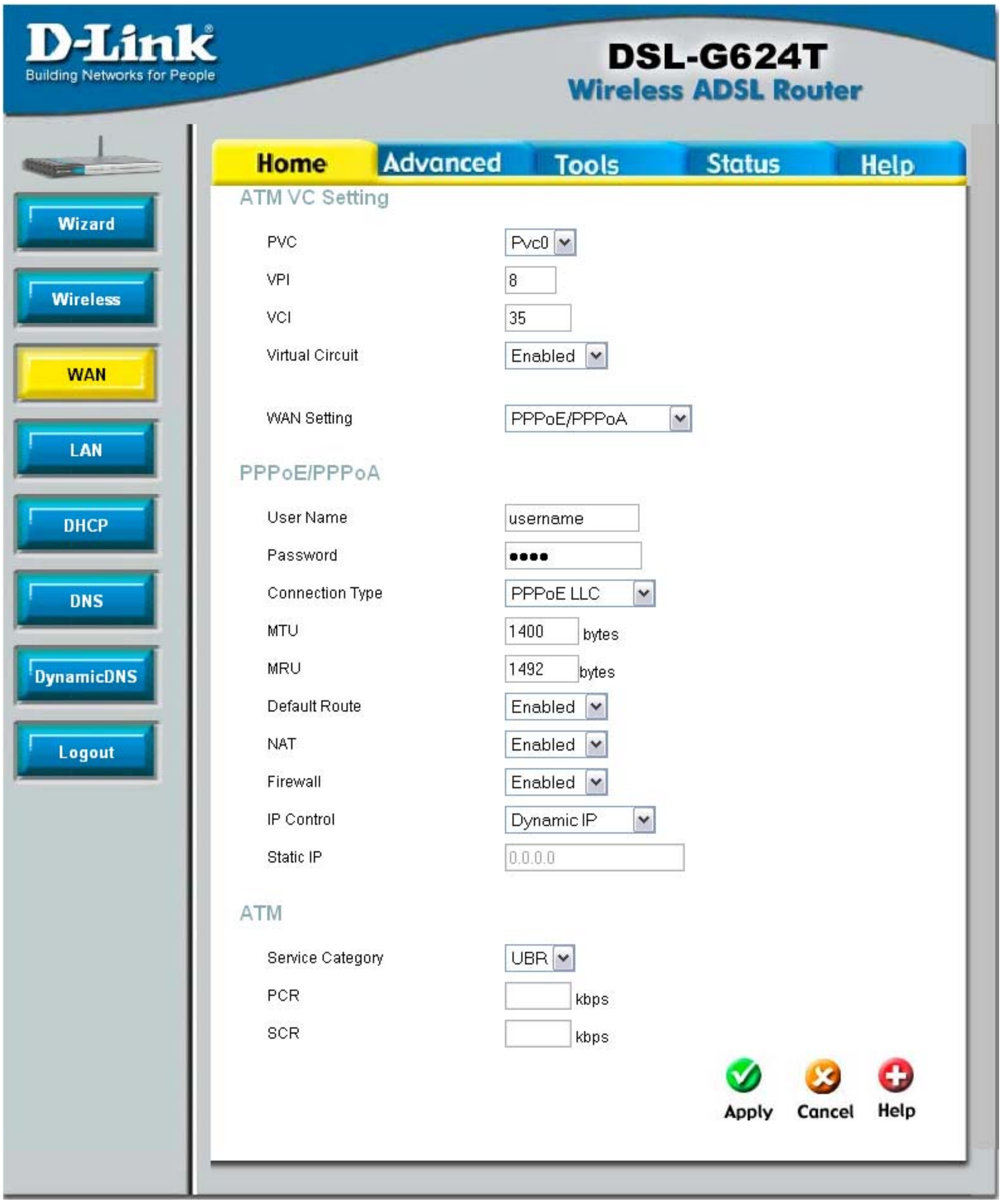
To use WPA with a PSK key:

1. Select the **PSK Hex** (Hexidecimal key) or **PSK String** (ASCII key of between 8 to 63 characters) option.
2. Type in the **Hex: or String:** key in the appropriate entry field.
3. Click the **Apply** button to put the changes into effect. Remember to save the settings using the System Settings menu.

Configure WAN Connection

To configure the Router's basic configuration settings without running the Setup Wizard, you can access the menus used to configure WAN, LAN, DHCP and DNS settings directly from the **Home** directory. To access the WAN Settings menu, click on the **WAN** link button on the left side of the first window that appears when you successfully access the web manager.

The WAN Settings menu is also used to configure the Router for multiple virtual connections (Multiple PVCs).



ATM VC Setting

PVC	Pvc0
VPI	8
VCI	35
Virtual Circuit	Enabled
WAN Setting	PPPoE/PPPoA

PPPoE/PPPoA

User Name	username
Password	••••
Connection Type	PPPoE LLC
MTU	1400 bytes
MRU	1492 bytes
Default Route	Enabled
NAT	Enabled
Firewall	Enabled
IP Control	Dynamic IP
Static IP	0.0.0.0

ATM

Service Category	UBR
PCR	kbps
SCR	kbps

WAN Settings Menu – PPPoE / PPPoA

Select the connection type used for your account. The menu will display settings that are appropriate for the connection type you select. Follow the instruction below according to the type of connection you select in the WAN Settings menu.

The new settings must be saved and the Router must be restarted for the settings to go into effect. To save the new settings and restart the Router, click on the **Tools** directory tab and then click the **System** menu button. Click the **Reboot** button under **Force the DSL-G624T to system restart**. The Router will save the new WAN settings, restart and attempt to establish the WAN connection.

PPPoE and PPPoA Connection for WAN

Follow the instructions below to configure the Router to use a PPPoE or PPPoA for the Internet connection. Make sure you have all the necessary information before you configure the WAN connection.

1. If not already selected, choose the **PPPoE/PPPoA** option from the **WAN Settings** pull-down menu. PPPoE/PPPoA is selected by default if you are configuring the Router for the first time.

2. Under the **ATM VC Settings** at the top of the menu should not be changed unless you have been instructed to change them. However, if you are instructed to change the **VPI** or **VCI** values, type in the values assigned for your account. Leave the **PVC** and **Virtual Circuit** setting at the default (*Pcv0* and *Enabled*) values for now. This can be used later if you are configuring multiple virtual circuits for your ADSL service. For more information on ATM VC Settings, see the table on page 42 below.

3. Under the **PPPoE/PPPoA** heading, type the **User Name** and **Password** used for your ADSL account. A typical User Name will be in the form user1234@isp.co.uk, the Password may be assigned to you by your ISP or you may have selected it when you set up the account with your ISP.

4. Choose the **Connection Type** from the pull-down menu located under the User Name and Password entry fields. This defines both the connection protocol and encapsulation method used for your ADSL service. The available options are *PPPoA VC-MUX, PPPoA LLC* and *PPPoE LLC.* If have not been provided specific information for the Connection Type setting, leave the default setting.

5. Leave the **MTU** value at the default setting (default = 1400) unless you have specific reasons to change this (see table below).

6. Leave the **MRU** value at the default setting (default = 1492) unless you have specific reasons to change this (see table below).

7. Leave the **Default Route** enabled if you want to use the Router as the default route to the Internet for your LAN. Whenever a computer on the LAN attempts to access the Internet, the Router becomes the Internet gateway to the computer. If you have an alternative route for Internet traffic you may disable this without effecting the Router's connection.

8. **NAT** should remain enabled. If you disable NAT, you not be able to use more than one computer for Internet connections. NAT is enabled and disabled system-wide, therefore if you are using multiple virtual connections, NAT will disabled on all connections.

9. The **Firewall** should remain enabled for most users. If you choose to disable this you will not be able to use the features configured in the Firewall and Filters menus located in the **Advanced** directory. See the next chapter for more details on these menus.

10. Typically the globally IP settings (i.e. IP address for the WAN interface) for a PPPoA or PPPoA connection will use Dynamic IP assignment from the ISP. Some accounts may be assigned a specific global IP address. If you have been give an IP address for you PPPoE/PPPoA connection, select the **Static IP** option from the **IP Control** pull-down menu. This menu can be used to configure the WAN port as an Unnumbered IP interface. (See table below for Unnumbered IP)

11. Most users will not need to change **ATM** settings. If this is the first time you are setting up the ADSL connection it is recommended that you leave the **Service Category** settings at the default values until you have established the connection. See the table on page 41 for a description of the parameters available for ATM traffic shaping.

12. When you are satisfied that all the WAN settings are configured correctly, click on the **Apply** button.

13. The new settings must be saved and the Router must be restarted for the settings to go into effect. To **Save & Reboot** the Router, click on the **Tools** directory tab and then click the **Save & Reboot** menu button. In the Save and Reboot menu, click the **Reboot** button under **Force the DSL-G624T to system restart**. The Router will save the new settings and restart. Upon restarting the Router will automatically establish the WAN connection.

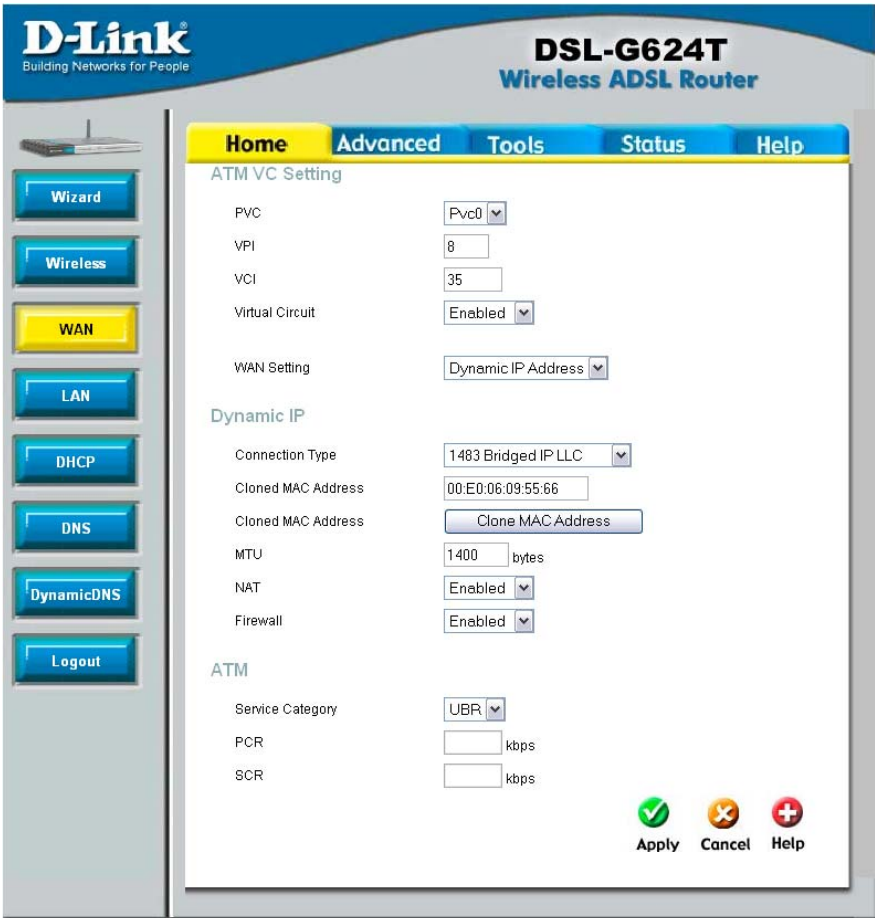
Additional settings for PPPoE/PPPoA connections:

PPPoE/PPPoA Parameters	Description
User Name	For PPP connections, a User Name and Password are used to identify and verify your account to the ISP. Enter the User Name for your ADSL service account. User names and passwords are case-sensitive, so enter this information exactly as given to you by your ISP.
Password	Together with the User Name, this is used to verify your account to the ISP. Enter the Password exactly as given to you by your ISP.
Connection Type	This specifies the protocol (PPPoE or PPPoA) and the encapsulation method (LLC or VC-MUX) used for your connection. The options available are *PPPoE LLC*, *PPPoA LLC* or *PPPoA VC-MUX*.
MTU	The Maximum Transmission Unit size may be changed if you want to optimize efficiency for uploading data through the WAN interface. The default setting (1400 bytes) should be suitable for most users. Some user may want to adjust the setting to optimize performance for wireless traffic or when low latency is desired (such as with Internet gaming). It is highly recommended that the user research how adjusting the MTU may effect network traffic for better or worse.
MRU	Similar to the MTU, except this applies to Maximum Received Unit size for downloading data. Most users will be happy with the default setting (1492 bytes). However this may also be optimized for fast downloads of general bulk Internet traffic, for low latency or for downloading to computers on the Wireless LAN. As with the MTU setting, the user should carefully consider how changing the MRU may effect Internet downloads for all systems on your LAN.
Default Route	When this is enabled, the Router will be considered to be the primary gateway to the Internet and WAN for systems on your network. If you are using the Router on a network with one or more alternative gateway routers, you may prefer to disable this if you will use another router as the primary gateway.
NAT	Network Address Translation may be enabled or disabled with the pull-down menu. Keep in mind that disabling NAT allows on a single computer to be used for Internet access through the Router. NAT is enabled and disable for the Router on all connections (i.e. Pvc0 – Pvc7) if your Router is set up for multiple virtual connections.
Firewall	Use this to universally enable or disable the Firewall and Filter features available in the Router. If you disable this you will not be able to configure settings in the Firewall or Filters menus in the Advanced directory.
IP Control	This is used to determine how global IP settings are handled for the WAN interface. Typically PPPoE or PPPoA connections will use the default setting for *Dynamic IP*. Some users will be given a specific IP address for the WAN interface. In this case you need to change this setting to *Static IP*. When Static IP is selected in the IP Control menu, you need to type in the global IP address provided to you by your ISP. The *IP Unnumbered* option is used if you want to set up a non-TCP/IP port protocol link through the WAN interface. An IP Unnumbered interface does not have an IP address and therefore cannot be managed via Telnet or any other TCP/IP application.
Static IP	If you have selected the *Static IP* option in the IP Control menu, type in the global IP address used for your WAN interface. This should be given to you by your ISP.

Dynamic IP Address Connection for WAN

A Dynamic IP Address connection configures the Router to automatically obtain its global IP address from a DHCP server on the ISP's network. The service provider assigns a global IP address from a pool of addresses available to the service provider. Typically the IP address assigned has a long lease time, so it will likely be the same address each time the Router requests an IP address.

To configure a Dynamic IP Address connection, perform the steps listed below. Some of the settings do not need to be changed the first time the device is set up, but can be changed later if you choose. See the table below for a description of all the settings available in this menu.



ATM VC Setting

PVC	Pvc0
VPI	8
VCI	35
Virtual Circuit	Enabled
WAN Setting	Dynamic IP Address

Dynamic IP

Connection Type	1483 Bridged IP LLC
Cloned MAC Address	00:E0:06:09:55:66
Cloned MAC Address	Clone MAC Address
MTU	1400 bytes
NAT	Enabled
Firewall	Enabled

ATM

Service Category	UBR
PCR	kbps
SCR	kbps

WAN Settings for Dynamic IP Address Connection

1. Choose the **Dynamic IP Address** option from the **WAN Settings** pull-down menu.
2. Under the **ATM VC Settings** at the top of the menu should not be changed unless you have been instructed to change them. However, if you are instructed to change the **VPI** or **VCI** values, type in the values assigned for your account. Leave the **PVC** and **Virtual Circuit** setting at the default (*Pcv0* and *Enabled*) values for now. This can be used later if you are configuring multiple virtual circuits for your ADSL service. For more information on ATM VC Settings, see the table on page 42 below.
3. Under the **Dynamic IP** heading, choose the **Connection Type** from the pull-down menu. This defines both the connection type and encapsulation method used for your ADSL service. The available options are *1483 Bridged IP LLC* and *1483 Bridged IP VC-Mux.* If have not been provided specific information for the Connection Type setting, leave the default setting.
4. Some ISPs record the unique MAC address of your computer's Ethernet adapter when you first access their network. This can prevent the Router (which has a different MAC address) from being allowed access to the ISPs network (and the Internet). To clone the MAC address of your computer's Ethernet adapter, type in the MAC address in the **Cloned MAC Address** field and click the **Clone MAC Address** button.
5. Leave the **MTU** value at the default setting (default = 1400) unless you have specific reasons to change this (see table below).
6. **NAT** should remain enabled. If you disable NAT, you not be able to use more than one computer for Internet connections. NAT is enabled and disabled system-wide, therefore if you are using multiple virtual connections, NAT will disabled on all connections.

7. The **Firewall** should remain enabled for most users. If you choose to disable this you will not be able to use the features configured in the Firewall and Filters menus located in the Advanced directory. See the next chapter for more details on these menus.
8. Most users will not need to change **ATM** settings. If this is the first time you are setting up the ADSL connection it is recommended that you leave the **Service Category** settings at the default values until you have established the connection. See the table on page 41 for a description of the parameters available for ATM traffic shaping.
9. When you are satisfied that all the WAN settings are configured correctly, click on the **Apply** button.
10. The new settings must be saved and the Router must be restarted for the settings to go into effect. To **Save & Reboot** the Router, click on the **Tools** directory tab and then click the **Save & Reboot** menu button. In the Save and Reboot menu, click the **Reboot** button under **Force the DSL-G624T to system restart**. The Router will save the new settings and restart. Upon restarting the Router will automatically establish the WAN connection.

Additional settings for Dynamic IP Address connections:

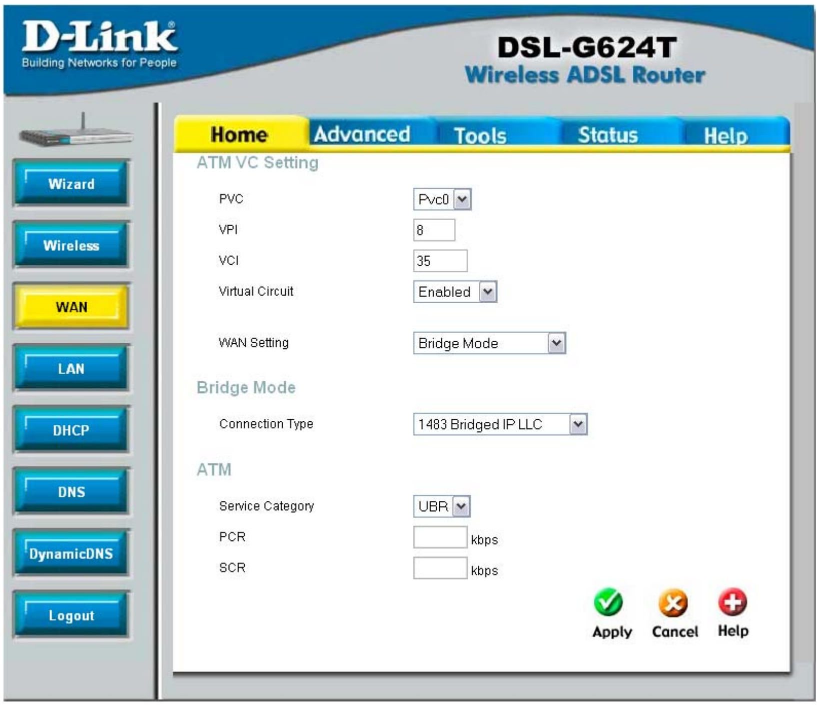
Dynamic IP Parameters	**Description**
Connection Type	This specifies the connection type and encapsulation method used for your Dynamic IP Address connection. The options available are *Bridged IP LLC* or *Bridged IP VC-MUX*.
Cloned MAC Address	This is not always necessary, but may be required for some ISPs. Type in the MAC address of your computer's Ethernet adapter in the Cloned MAC Address field and click the **Clone MAC Address** button. This will copy the information to a file used by the Router to present to the ISP's server used for DHCP. Some ISPs record the unique MAC address of your computer's Ethernet adapter when you first access their network. If you want to later replace the cloned MAC address with the factory default setting, type in all zeros - 0:0:0:0:0:0 - and click the Clone MAC Address button.
MTU	The Maximum Transmission Unit size may be changed if you want to optimize efficiency for uploading data through the WAN interface. The default setting (1400 bytes) should be suitable for most users. Some user may want to adjust the setting to optimize performance for wireless traffic or when low latency is desired (such as with Internet gaming). It is highly recommended that the user research how adjusting the MTU may affect network traffic for better or worse.
NAT	Network Address Translation may be enabled or disabled with the pull-down menu. Keep in mind that disabling NAT allows on a single computer to be used for Internet access through the Router. NAT is enabled and disable for the Router on all connections (i.e. Pvc0 – Pvc7) if your Router is set up for multiple virtual connections.
Firewall	Use this to universally enable or disable the Firewall and Filter features available in the Router. If you disable this you will not be able to configure settings in the Firewall or Filters menus in the Advanced directory.

Bridged Connection for WAN

For Bridged connections it will be necessary for most users to install additional software on any computer that will the Router for Internet access. The additional software is used for the purpose of identifying and verifying your account, and then granting Internet access to the computer requesting the connection. The connection software requires the user to enter the User Name and Password for the ISP account. This information is stored on the computer, not in the Router.

Follow the instructions below to configure a Bridged connection for the WAN interface.

To configure a Dynamic IP Address connection, perform the steps listed below. Some of the settings do not need to be changed the first time the device is set up, but can be changed later if you choose. See the table below for a description of all the settings available in this menu.



ATM VC Setting

PVC: Pvc0
VPI: 8
VCI: 35
Virtual Circuit: Enabled

WAN Setting: Bridge Mode

Bridge Mode

Connection Type: 1483 Bridged IP LLC

ATM

Service Category: UBR
PCR: kbps
SCR: kbps

WAN Settings Menu – Bridge Mode

1. Choose the **Bridge Mode** option from the **WAN Settings** pull-down menu.

2. Under the **ATM VC Settings** at the top of the menu should not be changed unless you have been instructed to change them. However, if you are instructed to change the **VPI** or **VCI** values, type in the values assigned for your account. Leave the **PVC** and **Virtual Circuit** setting at the default (*Pcv0* and *Enabled*) values for now. This can be used later if you are configuring multiple virtual circuits for your ADSL service. For more information on ATM VC Settings, see the table on page 42 below.

3. Under the **Bridge Mode** heading, choose the **Connection Type** from the pull-down menu. This defines both the connection type and encapsulation method used for your ADSL service. The available options are *1483 Bridged IP LLC* and *1483 Bridged IP VC-Mux*. If have not been provided specific information for the Connection Type setting, leave the default setting.

4. Most users will not need to change **ATM** settings. If this is the first time you are setting up the ADSL connection it is recommended that you leave the **Service Category** settings at the default values until you have established the connection. See the table on page 41 for a description of the parameters available for ATM traffic shaping.

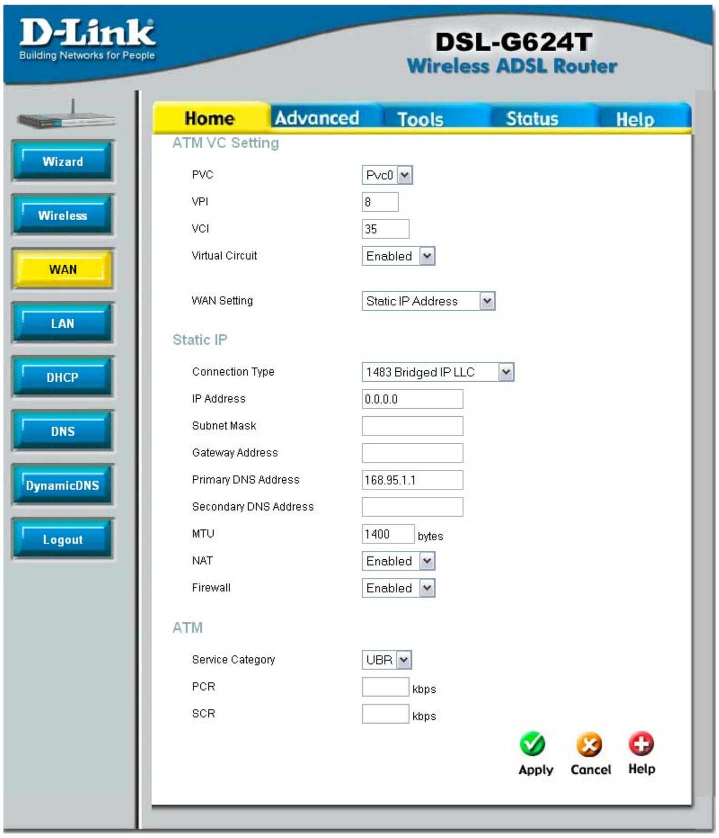
5. When you are satisfied that all the WAN settings are configured correctly, click on the **Apply** button.

6. The new settings must be saved and the Router must be restarted for the settings to go into effect. To **Save & Reboot** the Router, click on the **Tools** directory tab and then click the **Save & Reboot** menu button. In the Save and Reboot menu, click the **Reboot** button under **Force the DSL-G624T to system restart**. The Router will save the new settings and restart. Upon restarting, the Router will automatically establish the WAN connection.

Static IP Address for Connection WAN

When the Router is configured to use Static IP Address assignment for the WAN connection, you must manually assign a global IP Address, Subnet Mask and Gateway IP Address used for the WAN connection. Most users will also need to configure DNS server IP settings in the DNS Settings configuration menu (see below). Follow the instruction below to configure the Router to use Static IP Address assignment for the WAN connection.

To configure a Dynamic IP Address connection, perform the steps listed below. Some of the settings do not need to be changed the first time the device is set up, but can be changed later if you choose. See the table below for a description of all the settings available in this menu.



ATM VC Setting

PVC: Pvc0
VPI: 8
VCI: 35
Virtual Circuit: Enabled

WAN Setting: Static IP Address

Static IP

Connection Type: 1483 Bridged IP LLC
IP Address: 0.0.0.0
Subnet Mask:
Gateway Address:
Primary DNS Address: 168.95.1.1
Secondary DNS Address:
MTU: 1400 bytes
NAT: Enabled
Firewall: Enabled

ATM

Service Category: UBR
PCR: kbps
SCR: kbps

WAN Settings - Static IP

1. Choose the **Static IP Address** option from the **WAN Settings** pull-down menu.

2. Under the **ATM VC Settings** at the top of the menu should not be changed unless you have been instructed to change them. However, if you are instructed to change the **VPI** or **VCI** values, type in the values assigned for your account. Leave the **PVC** and **Virtual Circuit** setting at the default (*Pcv0* and *Enabled*) values for now. This can be used later if you are configuring multiple virtual circuits for your ADSL service. For more information on ATM VC Settings, see the table on page 42 below.

3. Under the **Static IP** heading, choose the **Connection Type** from the pull-down menu. This defines both the connection type and encapsulation method used for your ADSL service. The available options are *Bridged IP LLC*, *Bridged IP VC-MUX*, *Routed IP LLC*, *Routed IP VC-MUX* or *IPoA*.. If have not been provided specific information for the Connection Type setting, leave the default setting.

4. Change the **IP Address**, **Subnet Mask**, **Gateway Address** and (if available) **Secondary DNS** Server IP address as instructed by your ISP. These are the global IP settings for the WAN interface. This is the "visible" IP address of your account. Your ISP should have provided these IP settings to you. For IPoA (Classic IP over ATM) connections you may need to type in an additional IP address for a **ARP Server Address**. If you are using an IPoA connection, ask your ISP if it is necessary to use an ARP (Address Resolution Protocol) server.

5. Leave the **MTU** value at the default setting (default = 1400) unless you have specific reasons to change this (see table below).

6. **NAT** should remain enabled. If you disable NAT, you not be able to use more than one computer for Internet connections. NAT is enabled and disabled system-wide, therefore if you are using multiple virtual connections, NAT will disabled on all connections.

7. The **Firewall** should remain enabled for most users. If you choose to disable this you will not be able to use the features configured in the Firewall and Filters menus located in the **Advanced** directory. See the next chapter for more details on these menus.

8. Most users will not need to change **ATM** settings. If this is the first time you are setting up the ADSL connection it is recommended that you leave the **Service Category** settings at the default values until you have established the connection. See the table in the next section for a description of the parameters available for ATM traffic shaping.

9. When you are satisfied that all the WAN settings are configured correctly, click on the **Apply** button.

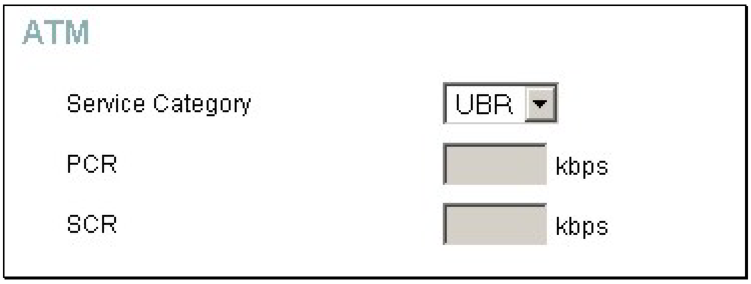
10. The new settings must be saved and the Router must be restarted for the settings to go into effect. To **Save & Reboot** the Router, click on the **Tools** directory tab and then click the **Save & Reboot** menu button. In the Save and Reboot menu, click the **Reboot** button under **Force the DSL-G624T to system restart**. The Router will save the new settings and restart. Upon restarting the Router will automatically establish the WAN connection.

Additional settings for Static IP Address connections:

Static IP Parameters	Description
Connection Type	This specifies the connection type and the encapsulation method used for your Static IP Address connection. The options available are *Bridged IP LLC*, *Bridged IP VC-MUX*, *Routed IP LLC*, *Routed IP VC-MUX* or *IPoA*.
IP Address	This is the permanent global IP address for your account. This is the address that is visible outside your private network. Get this from your ISP.
Subnet Mask	This is the Subnet mask for the WAN interface. Get this from your ISP.
Gateway Address	This is the IP address of your ISP's Gateway router. It provides the connection to the Router for IP routed traffic that is outside your ISP's network. That is, this will be the primary connection from the Router to most of the Internet. Get this IP address from your ISP.
ARP Server Address (for IPoA connection only)	This is not required for all IPoA connections. Check with your ISP for an ARP server IP address if this is necessary for your IPoA connection.
Primary DNS Address	This is the IP address of the first choice for Domain Name Service (DNS) used to match the named URL web address used by most browsers with the actual global IP address used for a web server. Usually this will be a server owned by the ISP. Get this IP address from your ISP.
Secondary DNS Address	This is the second choice for a DNS server. Get this IP address from your ISP.
MTU	The Maximum Transmission Unit size may be changed if you want to optimize efficiency for uploading data through the WAN interface. The default setting (1400 bytes) should be suitable for most users. Some user may want to adjust the setting to optimize performance for wireless traffic or when low latency is desired (such as with Internet gaming). It is highly recommended that the user research how adjusting the MTU may affect network traffic for better or worse.
NAT	Network Address Translation may be enabled or disabled with the pull-down menu. Keep in mind that disabling NAT allows on a single computer to be used for Internet access through the Router. NAT is enabled and disable for the Router on all connections (i.e. Pvc0 – Pvc7) if your Router is set up for multiple virtual connections.
Firewall	Use this to universally enable or disable the Firewall and Filter features available in the Router. If you disable this you will not be able to configure settings in the Firewall or Filters menus in the Advanced directory.

ATM Traffic Shaping

The ATM settings in the WAN configuration menus for the different connection types can be used to adjust QoS parameters for ADSL clients. This may not be available to all ADSL accounts. Ask your ISP if ATM


ATM

Service Category UBR

PCR kbps

SCR kbps

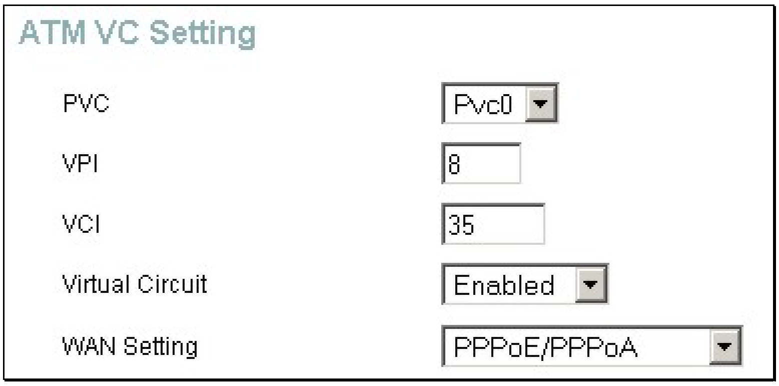
ATM Settings for WAN connection (PPPoE/PPPoA menu)

Additional ATM settings for PPPoE or PPPoA connections:

ATM QoS Parameters	Description
Service Category	The ATM settings allow the user to adjust ATM Quality of Service (QoS) or traffic parameters to suit specific traffic requirements. For applications or circumstances where packet loss or packet delay are a concern, ATM QoS can be adjusted to minimize problems. For most accounts, it will not be necessary to change these settings. Altering QoS settings can adversely affect performance of some commonly used Internet applications. If you plan to change QoS or traffic parameters, contact your ISP or network services provider for information on what types of adjustment are available or possible for your account. Your ISP may not support the class of service you want to use. To adjust ATM QoS parameters, select one of the Service Categories listed here and type in the PCR value in the entry field below. For the VBR service category, an additional parameter (SCR) must also be defined. *UBR* – Unspecified Bit Rate, this is the default category used for general-purpose Internet traffic where normal levels of packet loss and delay are acceptable. For some applications or for multiple connection accounts, it may be desirable to specify the PCR. *CBR* – Constant Bit Rate, usually used in circumstances where very low packet loss and very low Cell Delay Variable (CDV) are desirable. *VBR* – Variable Bit Rate, usually used when network traffic is characterized by bursts of packets at variable intervals, and some moderate packet loss and delay is acceptable. This category is typically used for audio and video applications such as teleconferencing. The network must support QoS Class 2 to use VBR.
PCR	Peak Cell Rate – The PCR is inversely related to the time interval between ATM cells. It is specified for all three service categories (UBR, CBR and VBR) in Kbps.
SCR	Sustainable Cell Rate – The SCR is defined for the VBR service category. This is the rate that can be sustained for "bursty", on-off traffic sources. It is a function of Maximum Burst Size (MBS) and the time interval (between cells).

ATM VC Settings

ATM VC settings can be configured for all connection types in the WAN configuration menu of the Home directory.



ATM VC Setting

PVC: Pvc0

VPI: 8

VCI: 35

Virtual Circuit: Enabled

WAN Setting: PPPoE/PPPoA

ATM VC Settings in WAN connection menu

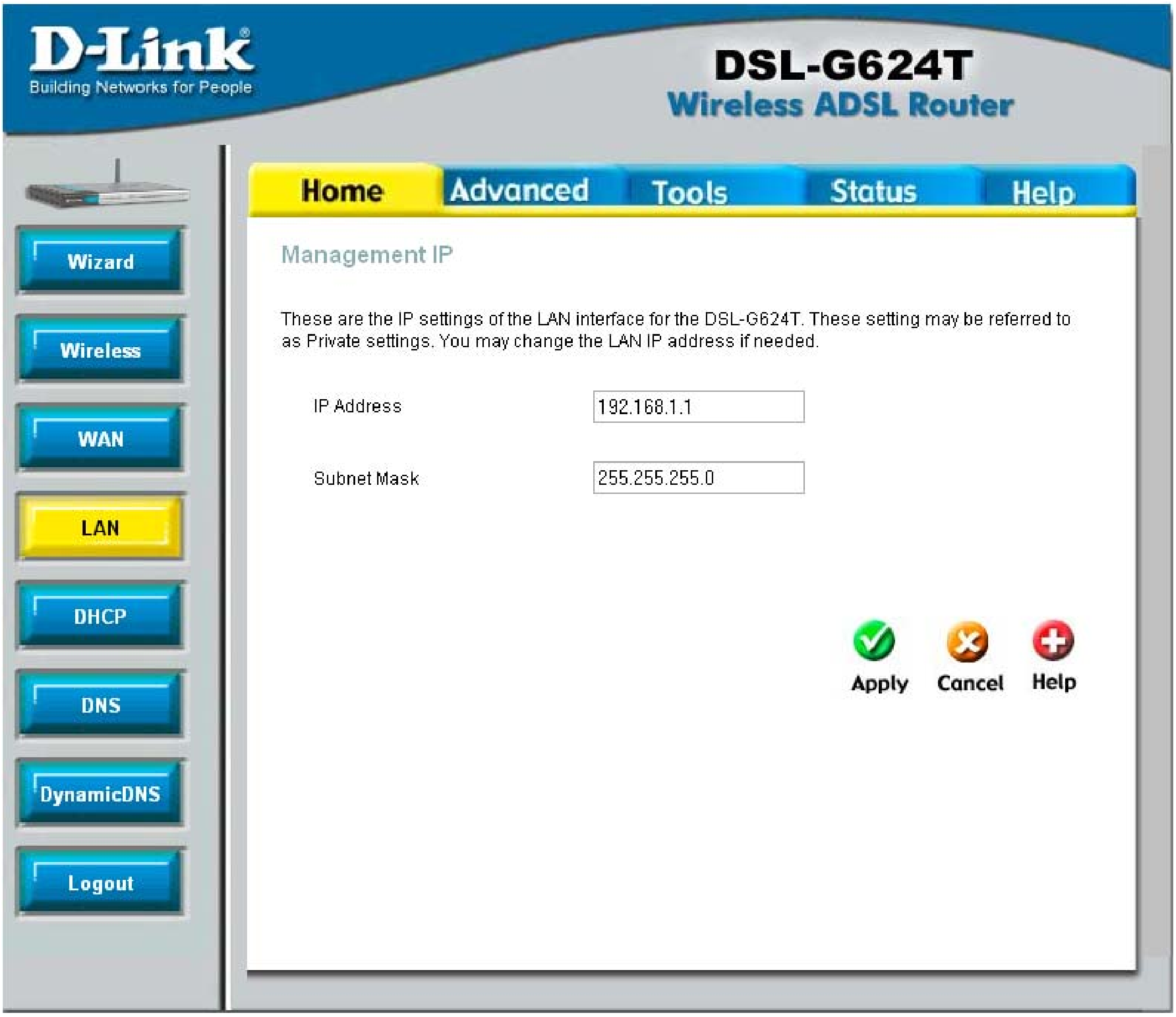
The table below describes the ATM VC settings used to configure a PPPoE or PPPoA connection for an ADSL account.

ATM VC Parameters	Description
PVC	The Router supports using up to eight multiple virtual connections. This menu allows the user to configure WAN settings for all the available connections (see instructions below on how to set up Multiple Virtual Connections). Use the PVC menu to select the connection (Pvc0 to Pvc7) you want to configure. Since most users will use only a single connection, the default setting Pvc0 can be used for any changes made to the WAN settings.
VPI	The Virtual Path Identifier is used with the VCI to define a dedicated circuit on the ATM network portion of the connection to the Internet and WAN. Most users will not need to change this setting.
VCI	The Virtual Channel Identifier is used with the VPI to define a dedicated circuit on the ATM network portion of the connection to the Internet and WAN. Most users will not need to change this setting.
Virtual Circuit	As with the PVC setting, this is mainly for use by clients who are configuring the Router for multiple virtual connections. Use this to enable or disable the PVC you are currently configuring. By default, the Pvc0 is enabled and the remaining PVCs are disabled.
WAN Setting	Use this to change the type of connection used. The options are: *PPPoE/PPPoA*, *Dynamic IP Address*, *Static IP Address* and *Bridge Mode*. Each option will offer a different settings for configuration.

LAN IP Settings

You can configure the LAN IP address to suit your preference. Many users will find it convenient to use the default settings together with DHCP service to manage the IP settings for their private network. The IP address of the Router is the base address used for DHCP. In order to use the Router for DHCP on your LAN, the IP address pool used for DHCP must be compatible with the IP address of the Router. The IP addresses available in the DHCP IP address pool will change automatically if you change the IP address of the Router. See the next section for information on DHCP setup.

To access the **LAN Settings** menu, click the **LAN** button in the **Home** directory.



Management IP

These are the IP settings of the LAN interface for the DSL-G624T. These setting may be referred to as Private settings. You may change the LAN IP address if needed.

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Configure LAN IP settings

To change the **LAN IP Address** or **LAN Network Mask**, type in the desired values and click the **Apply** button. Your web browser should automatically be redirected to the new IP address. You will asked to login again to the Router's web manager.

DHCP Server Settings for the LAN

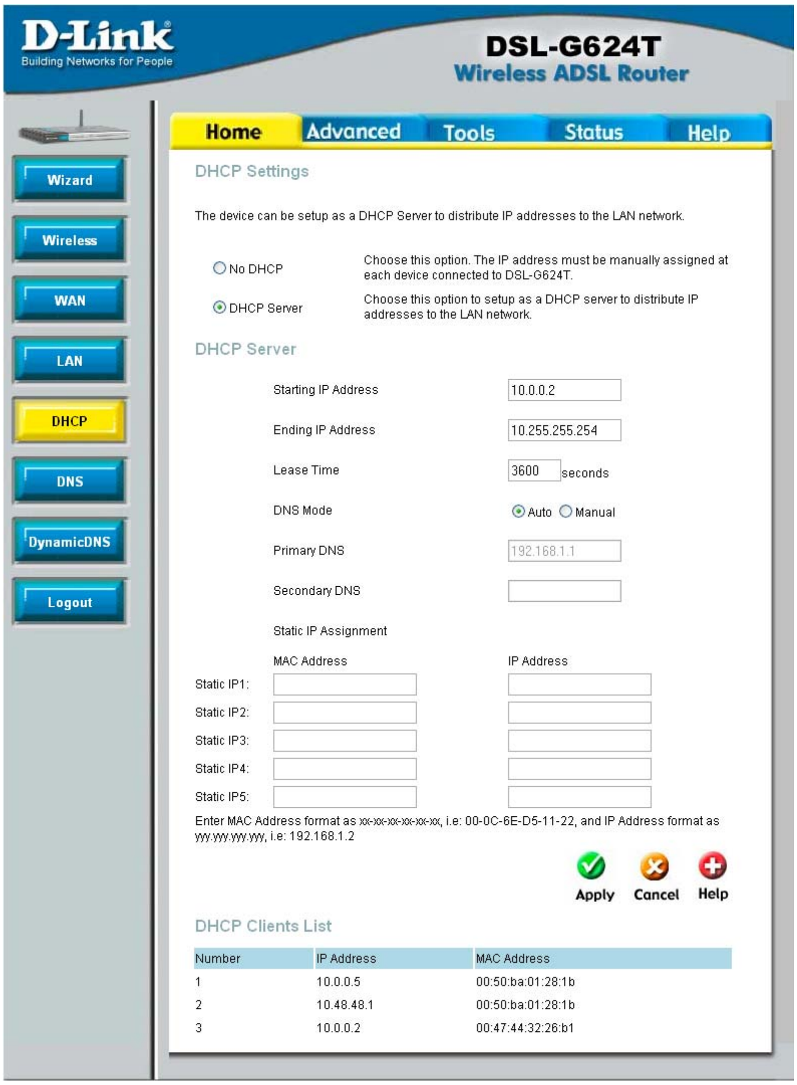
The DHCP server is enabled by default for the Router's Ethernet LAN interface. DHCP service will supply IP settings to workstations configured to automatically obtain IP settings that are connected to the Router though the Ethernet port. When the Router is used for DHCP it becomes the default gateway for DHCP client connected to it. Keep in mind that if you change the IP address of the Router the range of IP addresses in the pool used for DHCP on the LAN will also be changed. The IP address pool can be up to 253 IP addresses.

To display the **DHCP Server** menu, click the **DHCP** button in the **Home** directory. Any active DHCP Clients appear listed in the **DHCP Client List** below the configuration menu. The IP address and MAC address for active DHCP clients are displayed in the list.

To fix a static IP address to a specific device, use the Static IP Assignement menu. Read more about this feature below.

The two options for DHCP service are as follows:

- You may use the Router as a DHCP server for your LAN.
- You can disable DHCP service and manually configure IP settings for workstations.



DHCP Settings

The device can be setup as a DHCP Server to distribute IP addresses to the LAN network.

○ No DHCP — Choose this option. The IP address must be manually assigned at each device connected to DSL-G624T.

● DHCP Server — Choose this option to setup as a DHCP server to distribute IP addresses to the LAN network.

DHCP Server

Starting IP Address: 10.0.0.2

Ending IP Address: 10.255.255.254

Lease Time: 3600 seconds

DNS Mode: ● Auto ○ Manual

Primary DNS: 192.168.1.1

Secondary DNS:

Static IP Assignment

	MAC Address	IP Address
Static IP1:		
Static IP2:		
Static IP3:		
Static IP4:		
Static IP5:		

Enter MAC Address format as xx-xx-xx-xx-xx-xx, i.e: 00-0C-6E-D5-11-22, and IP Address format as yyy.yyy.yyy.yyy, i.e: 192.168.1.2

DHCP Clients List

Number	IP Address	MAC Address
1	10.0.0.5	00:50:ba:01:28:1b
2	10.48.48.1	00:50:ba:01:28:1b
3	10.0.0.2	00:47:44:32:26:b1

Configure DHCP server settings for the LAN

You may also configure DNS settings for the LAN when using the Router in DHCP mode. In Auto **DNS Mode,** the Router will automatically relay DNS settings to properly configured DHCP clients. To manually enter DNS IP addresses, select the **Manual** DNS Mode option and type in a **Primary** and **Secondary DNS** IP Address in the field provided. The manually configured DNS settings will be supplied to clients that are configured to request them from the Router.

Follow the instructions below according to which of the above DHCP options you want to use. When you have configured the DHCP Settings as you want them, click the **Apply** button to commit the new settings. The new settings must be saved and the Router must be restarted for the settings to go into effect. To save the new settings and restart the Router, click on the **Tools** directory tab and then click the **System** menu button. Click the **Reboot** button under **Force the DSL-G624T to system restart**. The Router will save the new DHCP settings and restart.

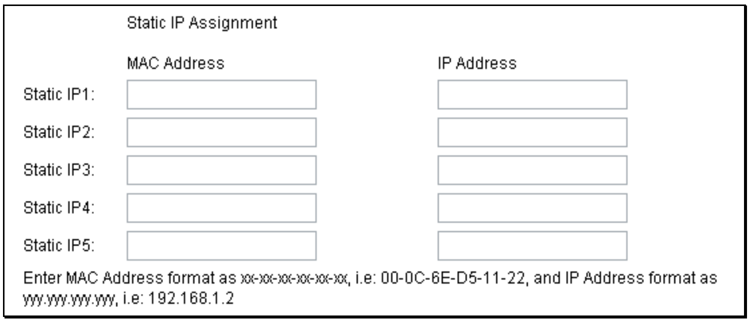
Use the Router for DHCP

To use the built-in DHCP server, click to select the **DHCP Server** option if it is not already selected. The IP Address Pool settings can be adjusted. The **Starting IP Address** is the lowest available IP address (default = 192.168.1.2). If you change the IP address of the Router this will change automatically to be 1 more that the IP address of the Router. The **Ending IP Address** is the highest IP address number in the pool. Type in the **Lease Time** in the entry field provided. This is the amount of time in seconds that a workstation is allowed to reserve an IP address in the pool if the workstation is disconnected from the network or powered off.

Static IP Settings for the LAN

If you want to fix an IP address to a specific MAC address on your LAN, use the Static IP Assignment feature located on the DHCP settings menu. Up to 5 static IP addresses may be configured.

To assign an IP address that will not age out, type in the MAC address of the device and its static IP address in the spaces provided. Use the format: 00-20-E0-62-B9-EB for the MAC address and the standard format: 192.168.1.33 for the IP address.



Static IP Assignment

	MAC Address	IP Address
Static IP1:		
Static IP2:		
Static IP3:		
Static IP4:		
Static IP5:		

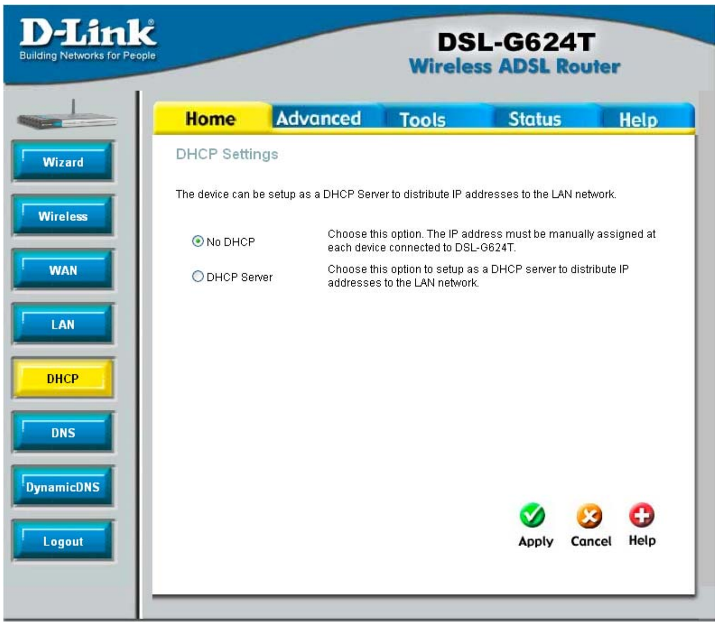
Enter MAC Address format as xx-xx-xx-xx-xx-xx, i.e: 00-0C-6E-D5-11-22, and IP Address format as yy.yy.yy.yy, i.e: 192.168.1.2

Static IP Assignment for LAN

Disable the DHCP Server

To disable DHCP, click to select the **No DHCP** option and click on the **Apply** button. Choosing this option requires that workstations on the local network must be configured manually or use another DHCP server to obtain IP settings.

If you configure IP settings manually, make sure to use IP addresses in the subnet of the Router. You will need to use the Router's IP address as the Default Gateway for the workstation in order to provide Internet access.



DHCP Settings

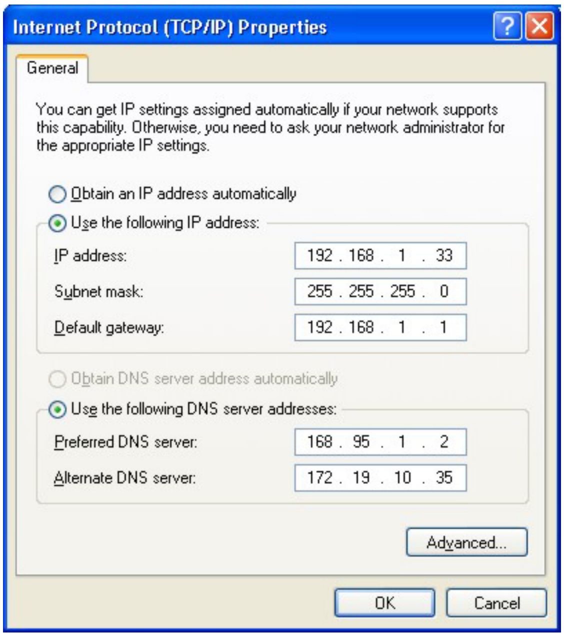
The device can be setup as a DHCP Server to distribute IP addresses to the LAN network.

● No DHCP — Choose this option. The IP address must be manually assigned at each device connected to DSL-G624T.

○ DHCP Server — Choose this option to setup as a DHCP server to distribute IP addresses to the LAN network.

DHCP Settings menu with DHCP disabled

To manually configure IP settings on Windows workstations, open the TCP/IP Properties menu and select the "Use the following IP address" option. You will need to supply the IP address, Subnet mask and Defualt gateway for each workstation. The example here also uses manually configured DNS settings.



You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: 192 . 168 . 1 . 33

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 1 . 1

○ Obtain DNS server address automatically

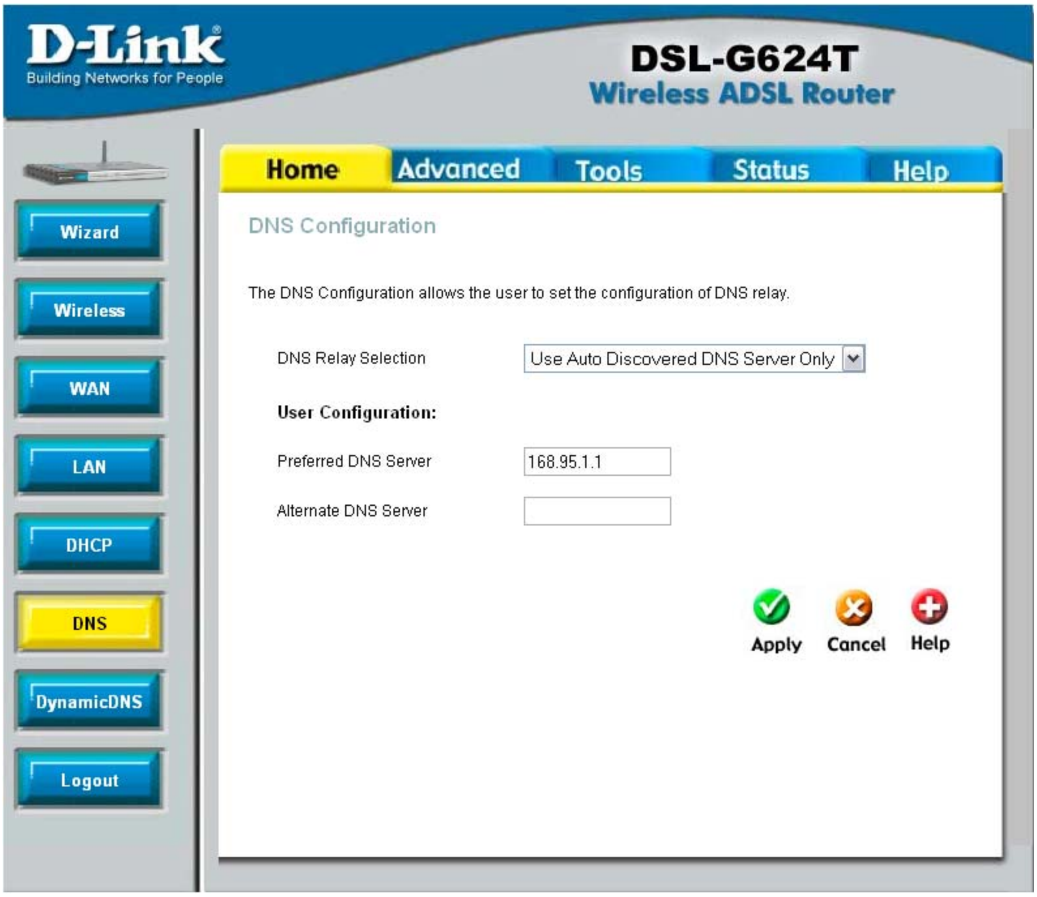
● Use the following DNS server addresses:

Preferred DNS server: 168 . 95 . 1 . 2

Alternate DNS server: 172 . 19 . 10 . 35

DNS Server Settings

The Router can be configured to relay DNS settings from your ISP or another available service to workstations on your LAN. When using DNS relay, the Router will accept DNS requests from hosts on the LAN and forward them to the ISP's, or alternative DNS servers. DNS relay can use auto discovery or the DNS IP address can be manually entered by the user. Alternatively, you may also disable the DNS relay and configure hosts on your LAN to use DNS servers directly. Most users who are using the Router for DHCP service on the LAN and are using DNS servers on the ISP's network, will leave DNS relay enabled (either auto discovery or user configured).



DNS Configuration

The DNS Configuration allows the user to set the configuration of DNS relay.

DNS Relay Selection: Use Auto Discovered DNS Server Only

User Configuration:

Preferred DNS Server: 168.95.1.1

Alternate DNS Server:

Configure DNS Settings

In the DNS Relay Selection pull-down menu, choose to *Use Auto Discovery*, *Use User Configured* or *Disable* DNS relay.

If you have not been given specific DNS server IP addresses or if the Router is not pre-configured with DNS server information, select the Auto Discover option for DNS relay. Auto discovery DNS instructs the Router to automatically obtain the DNS IP address from the ISP through DHCP. If your WAN connection uses a Static IP address, auto discovery for DNS cannot be used.

If you have DNS IP addresses provided by your ISP, enter these IP addresses in the available entry fields for the **Preferred DNS Server** and the **Alternative DNS Server**.

If you choose to disable DNS relay, it will be necessary to configure DNS settings for hosts on the LAN since they will not be depending on the Router to forward the DNS requests.

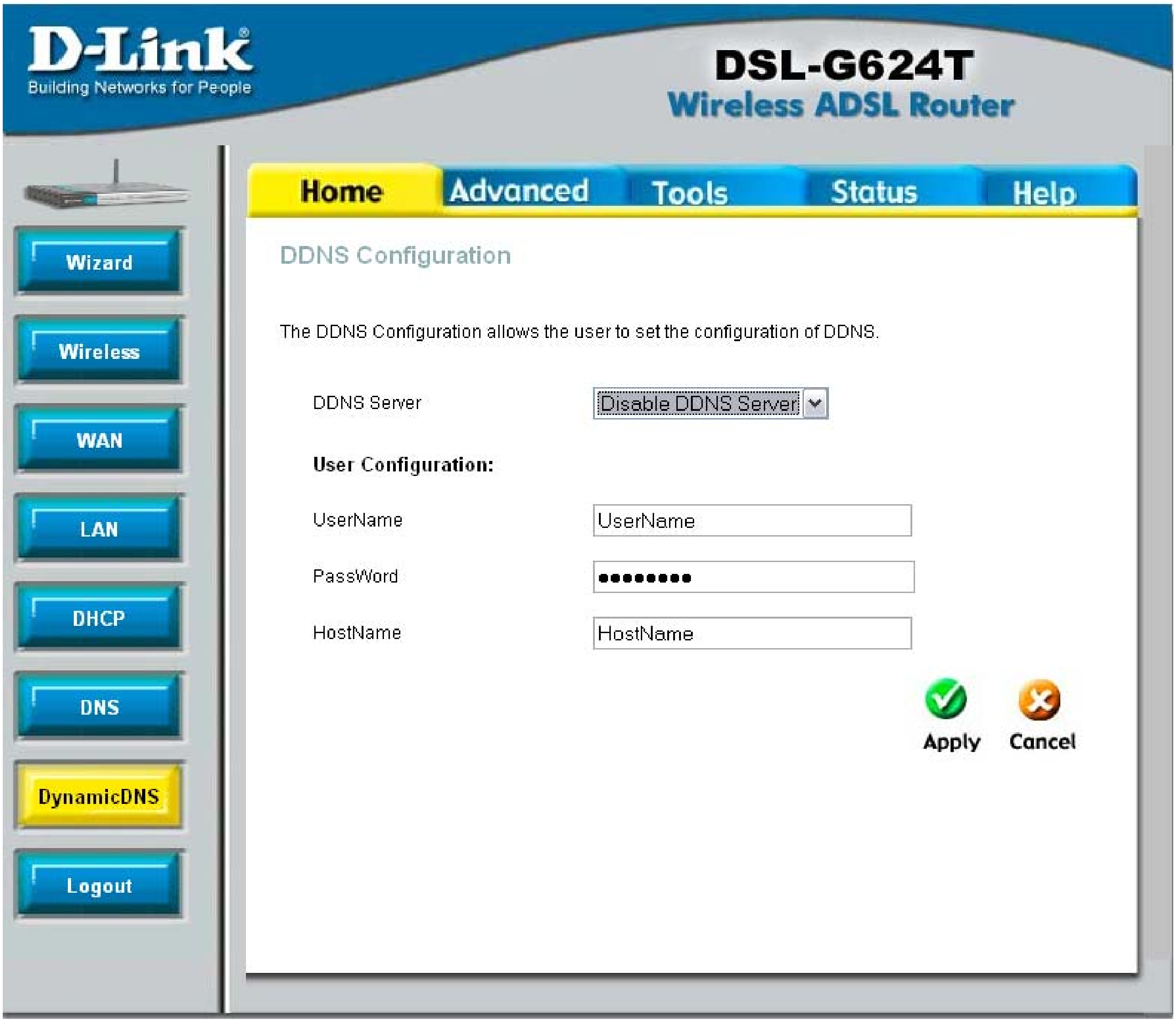
When you have configured the DNS settings as desired, click the **Apply** button.

Note

*To use DNS Relay for computers on your local network, DNS Service Filtering must be disabled. See the **Firewall** section in the next chapter.*

Dynamic DNS

The DI-624S supports DDNS or Dynamic Domain Name Service. Dynamic DNS allows a dynamic public IP address to be associated with a static host name in any of the many domains, allowing access to a specific host from various locations on the Internet. With this function enabled, remote access to a host will be allowed by choosing a URL by using the pull-down menu. Because many ISPs assign public IP addresses using DHCP, it can be difficult to locate a specific host on the LAN using the standard DNS. For example, if you are running a public web server or VPN server on your LAN, DDNS ensures that the host can be located from the Internet if the public IP address changes. DDNS requires that an account be setup with one of the supported DDNS servers.



DDNS Configuration

The DDNS Configuration allows the user to set the configuration of DDNS.

DDNS Server: Disable DDNS Server

User Configuration:

UserName: UserName

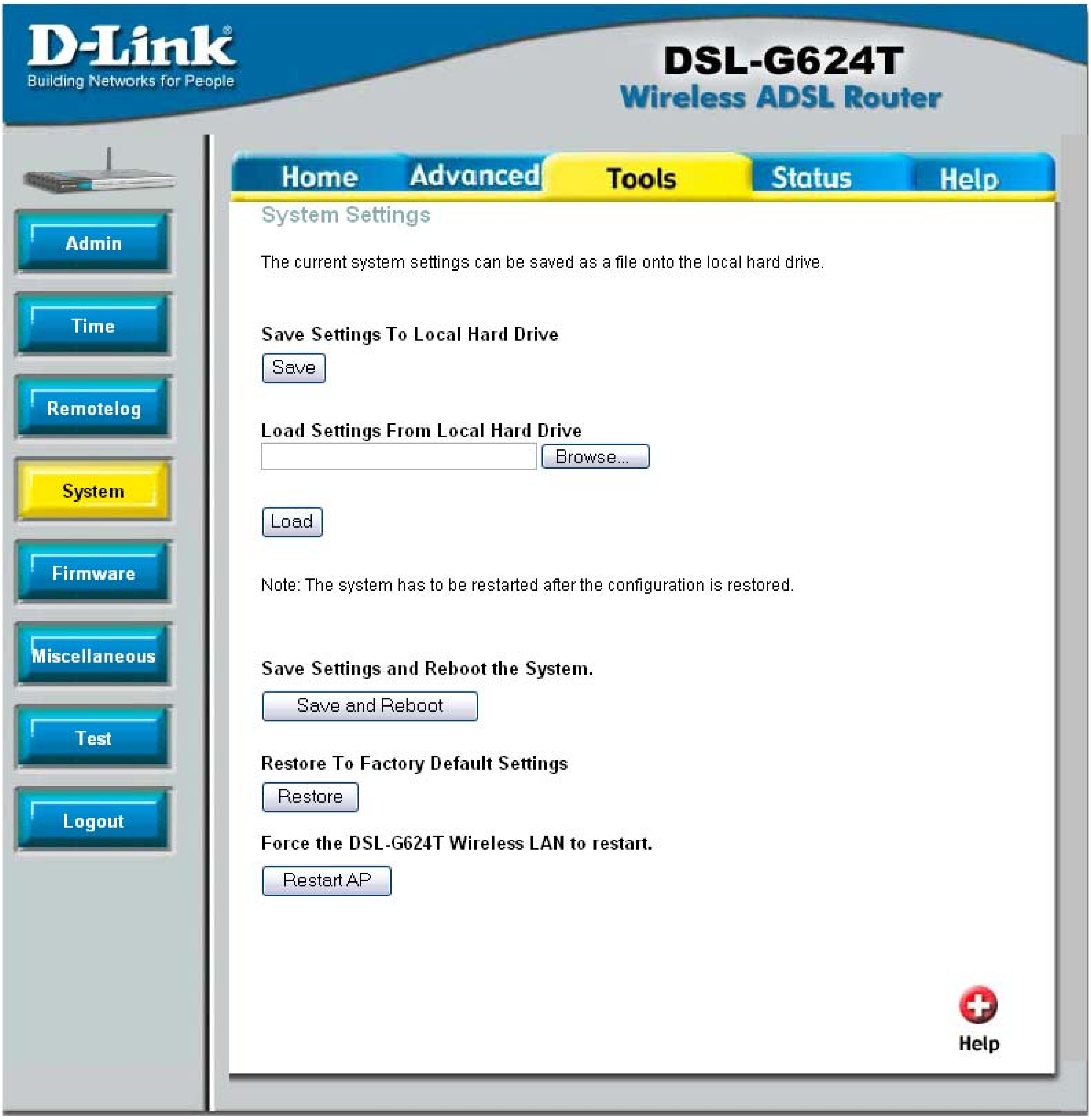
PassWord: ●●●●●●●●●

HostName: HostName

Dynamic DNS Configuration

Save Settings and Reboot

When you have configured the DSL-G624T with the settings you desire, make sure you save those settings. To save the system configuration settings, click the **Tools** tab. You will be presented first with the Administrator Settings menu. This menu is described in the next chapter. To save the current configuration, click the **System** button to view the **System Settings** menu pictured here.



System Settings

The current system settings can be saved as a file onto the local hard drive.

Save Settings To Local Hard Drive

Load Settings From Local Hard Drive

Note: The system has to be restarted after the configuration is restored.

Save Settings and Reboot the System.

Restore To Factory Default Settings

Force the DSL-G624T Wireless LAN to restart.

Save and Reboot menu

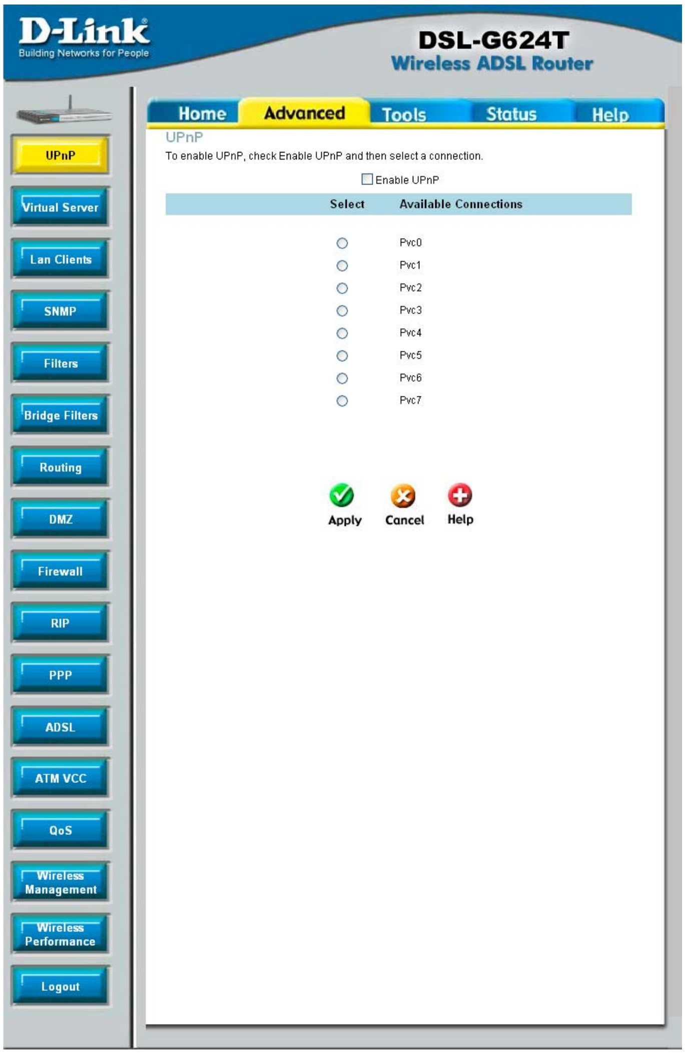
To save the settings you have configured, click the **Reboot** button under **Force the DSL-G624T to system restart**.

To perform and simple restart of the wireless access point without saving any changes made to wireless settings, click the **Restart AP** button under **Force the DSL-G624T Wireless LAN**. Restarting the wireless access point will NOT save any changes made to wireless settings. To save wireless settings perform a system resart.

Advanced Router Management

This chapter introduces and describes the management features that have not been presented in the previous chapter. These include the more advanced features used for network management and security as well as administrative tools to manage the Router, view statistics and other information used to examine performance and for troubleshooting.

Use your mouse to click the directory tabs and menu buttons in order to display the various configuration and read-only menus discussed below. The table below summarizes again the directories and menus available in the management web interface. In this chapter you will find descriptions for the menus located in the Advanced, Tools and Status directories.



UPnP

To enable UPnP, check Enable UPnP and then select a connection.

□ Enable UPnP

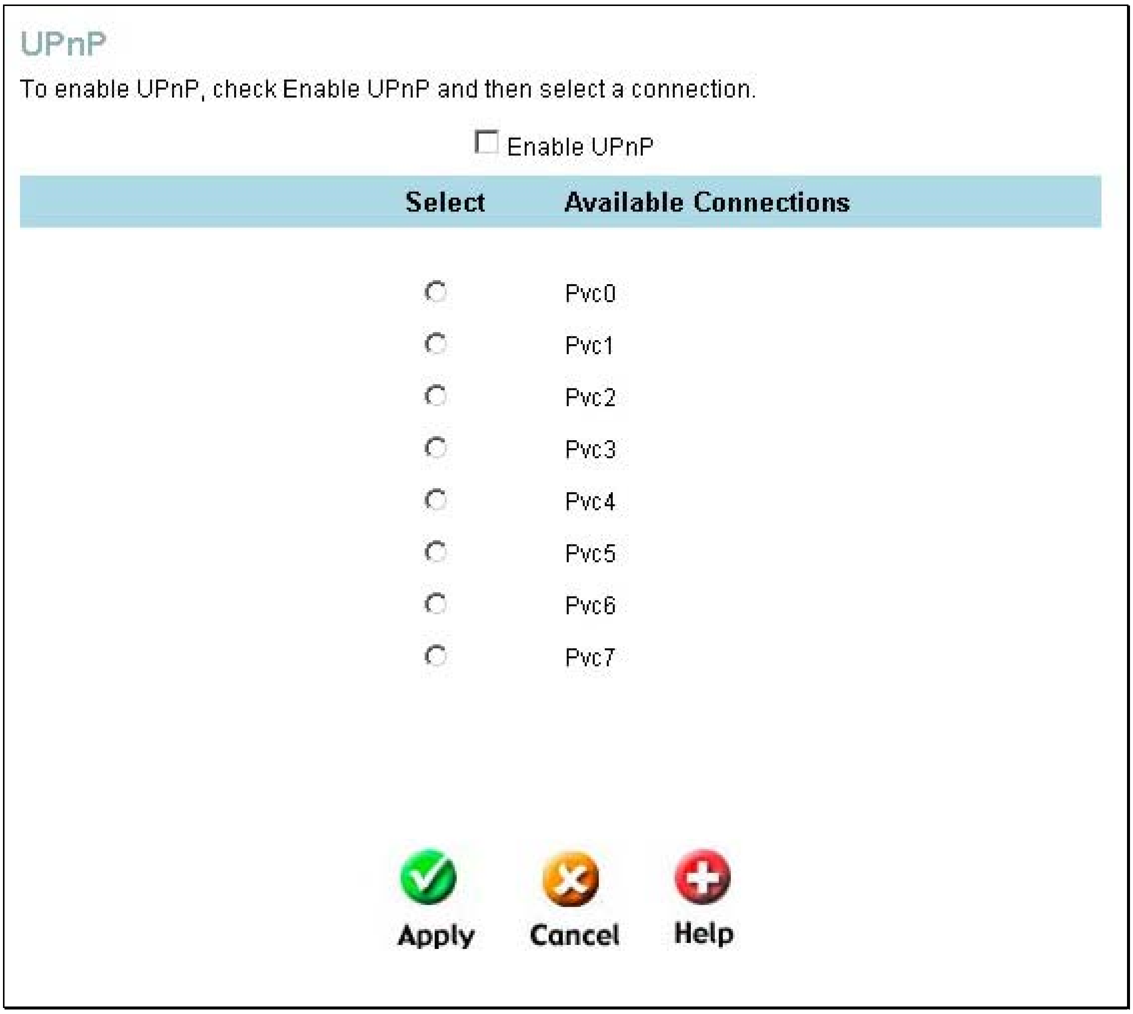
Select	Available Connections
○	Pvc0
○	Pvc1
○	Pvc2
○	Pvc3
○	Pvc4
○	Pvc5
○	Pvc6
○	Pvc7

Directory	Configuration and Read-only Menus
Home	Click the **Home** tab to access the Setup **Wizard**, **Wireless** Settings, **WAN** Configuration, **LAN** IP Configuration, **DHCP** for the LAN Setup, **DNS** and **DymanicDNS** Configuration menus. See the previous chapter for a description of the Home directory menus.
Advanced	Click the **Advanced** tab to access the **UPnP**, **Virtual Server**, **Filters,** (Static) **Routing**, **DMZ**, **Firewall**, **RIP**, **PPP**, **ADSL**, **ATM VCC**, **QoS**, **Wireless Management** and **Wireless Performance** menus.
Tools	Click the **Tools** tab to access the **Administrator Settings** (used to set the system user name and password, backup and load settings), **System Time Configuration**, **Firmware Upgrade**, **Diagnostic Test** and **Save & Reboot menus.**
Status	Click the **Status** tab to view the **Device Information**, **DHCP Clients**, **Event Log**, **Traffic Statistics** and **ADSL Status** information windows.
Help	The Help menu presents links to pages that explain various functions and services provided by the Router.

UPnP

UPnP supports zero-configuration networking and automatic discovery for many types of networked devices. When enabled, it allows other devices that support UPnP to dynamically join a network, obtain an IP address, convey its capabilities, and learn about the presence and capabilities of other devices. DHCP and DNS service can also be used if available on the network. UPnP also allows supported devices to leave a network automatically without adverse effects to the device or other devices on the network.

UPnP can be supported by diverse networking media including Ethernet, Firewire, phone line and power line networking.



UPnP

To enable UPnP, check Enable UPnP and then select a connection.

□ Enable UPnP

Select	Available Connections
○	Pvc0
○	Pvc1
○	Pvc2
○	Pvc3
○	Pvc4
○	Pvc5
○	Pvc6
○	Pvc7

Enable UPnP Menu

To enable UPnP for any available connection, click to check the **Enable UPnP** selection box, select the connection or connections on which you will enable UPnP listed under **Available Connections** and click the **Apply** button.

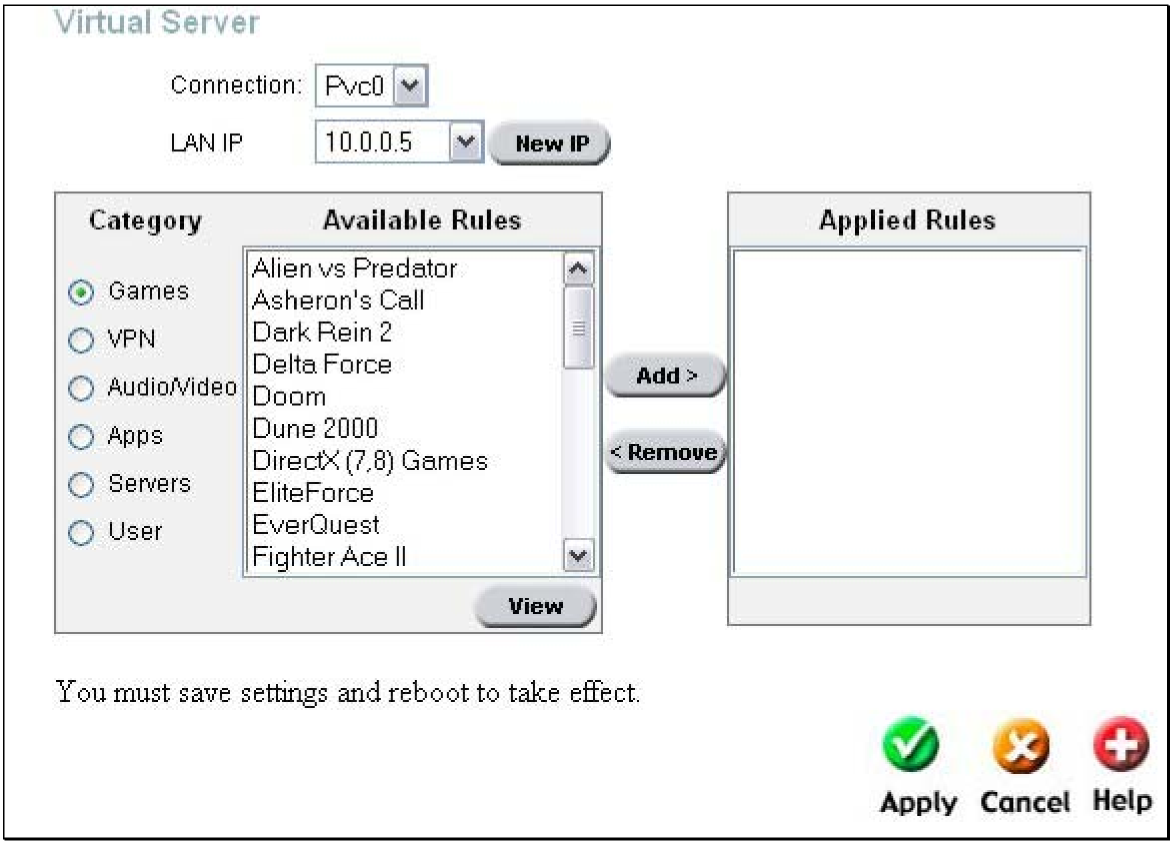
Virtual Server

Use the Virtual Server menu to set up port forwarding rules in the Router. The Virtual Server function allows remote users to access services on your LAN such as FTP for file transfers or SMTP and POP3 for e-mail. The DSL-G624T will accept remote requests for these services at your Global IP Address, using the specified TCP or UDP protocol and port number, and then redirect these requests to the server on your LAN with the Private IP address you specify. Remember that the specified Private IP Address must be within the useable range of the subnet occupied by the Router.

UDP/TCP port redirection is used to direct traffic through the WAN port to the specified servers or workstations on your private network. Port redirection can also be used to direct potentially hazardous packets to a proxy server outside your firewall. For example, you can configure the Router to direct HTTP packets to a designated HTTP server in the DMZ. You can define a set of instructions for a specific incoming port or for a range of incoming ports. Each set of instructions or rule is indexed and can be modified or deleted later as needed.

Virtual server rules can be set up with complimentary features such as Firewall Rules, DMZ devices and IP Filters to improve efficiency and security. Be sure to consider how these other functions will effect the virtual server rules you have configured and enabled.

The table below describes the configuration settings presented in the Virtual Server menu.



Virtual Server

Connection: Pvc0

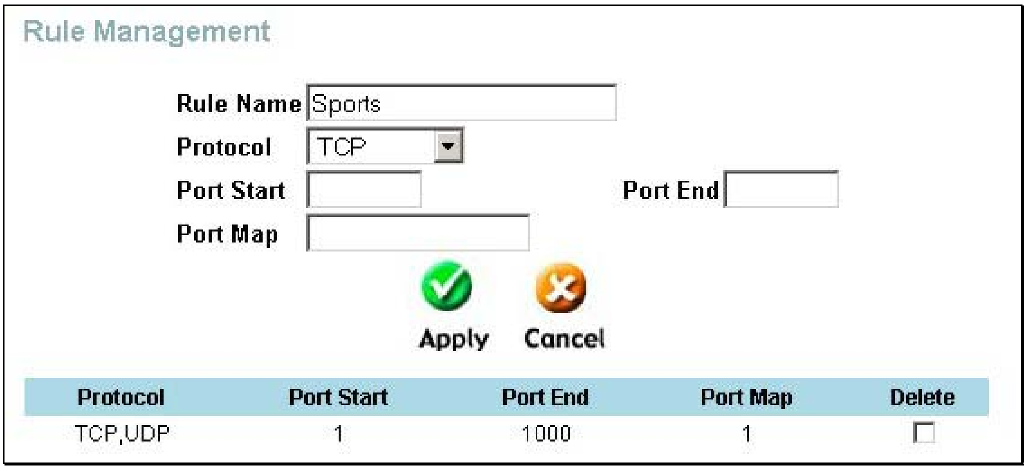
LAN IP 10.0.0.5

Category: ● Games

You must save settings and reboot to take effect.

Virtual Server Menu and List

To modify virtual server settings for any previously created rule, click the appropriate **Category** to the left for the set you want to configure. There are six categories, which maybe configured for each PVC. Five categaries, **Games**, **VPN**, **Audio/Video**, **Apps** and **Servers** have pre-defined rules which may be added to the selected **Connection** by clicking it and then clicking the Add button. Any of these rules may be removed by selecting it and clicking the **Remove** button. The User category is for user-defined rules that may be configured by selecting the User category and then clicking the Add button, which will reveal a new screen to configure, as seen below.



Rule Management

Rule Name: Sports

Protocol: TCP

Port Start:

Port End:

Port Map:

Protocol	Port Start	Port End	Port Map	Delete
TCP,UDP	1	1000	1	□

Rule Management window

To configure this window, enter a **Rule Name**, the **Protocol** (TCP, UDP or both), a range of virtual ports to be used in the **Port Start** and **Port End** fields and the Port for which this rule is to be applied. Click **Apply** to set the new rule. These rules may be edited or deleted in the screen prior to the one above by clicking the **Edit** or **Delete** button. See the following window for more information.

Parameter	Description
Rule Name	Provide a name for the rule. This name will not appear in the list below, however it may be useful if you later need to edit the settings for the rule. Rule names are optional.
Private IP	This is the IP address of the server on your LAN that will provide the service to remote users. The Private IP address is used to direct the service to a specific computer on your private network such as an FTP, Email or public web server. Type in the IP address of the server used for the service being configured here.
Protocol	You can select the transport protocol (TCP or UDP) that the application on the virtual server will use for its connections. Select one of the following options from the pull-down menu to define a *TCP*, *UDP* or *Both*. The choice of this protocol is dependent on the application that is providing the service. If you do not know which protocol to choose, check your application's documentation.
Port Start /Port End	Configure a range of ports for forwarding. Type the lowest numbered port in the range in the Port Start space. Type the highest numbered port in the Port End space. For a single port, just enter the same number in both spaces. Virtual server port redirection must be used with a specified server or computer on the LAN (identified by the Private IP address).
Port Map	This is the local port being forwarded to from the Port Start/Port End port(s). Keep in mind that if you use a non-standard port number for an application with a reserved UDP/TCP port, some additional configuration may be required for the servers or workstations using the application on the LAN side.

Click the **Apply** button to put the new virtual server configuration set or modification into effect. Any server sets configured in the menu will appear in the Virtual Server List with the new settings. The Router must save the new settings and reboot before the new virtual server configurations are applied.

To remove any configuration set from the Virtual Server List, click on the Delete button after selecting the option for set you want to delete.

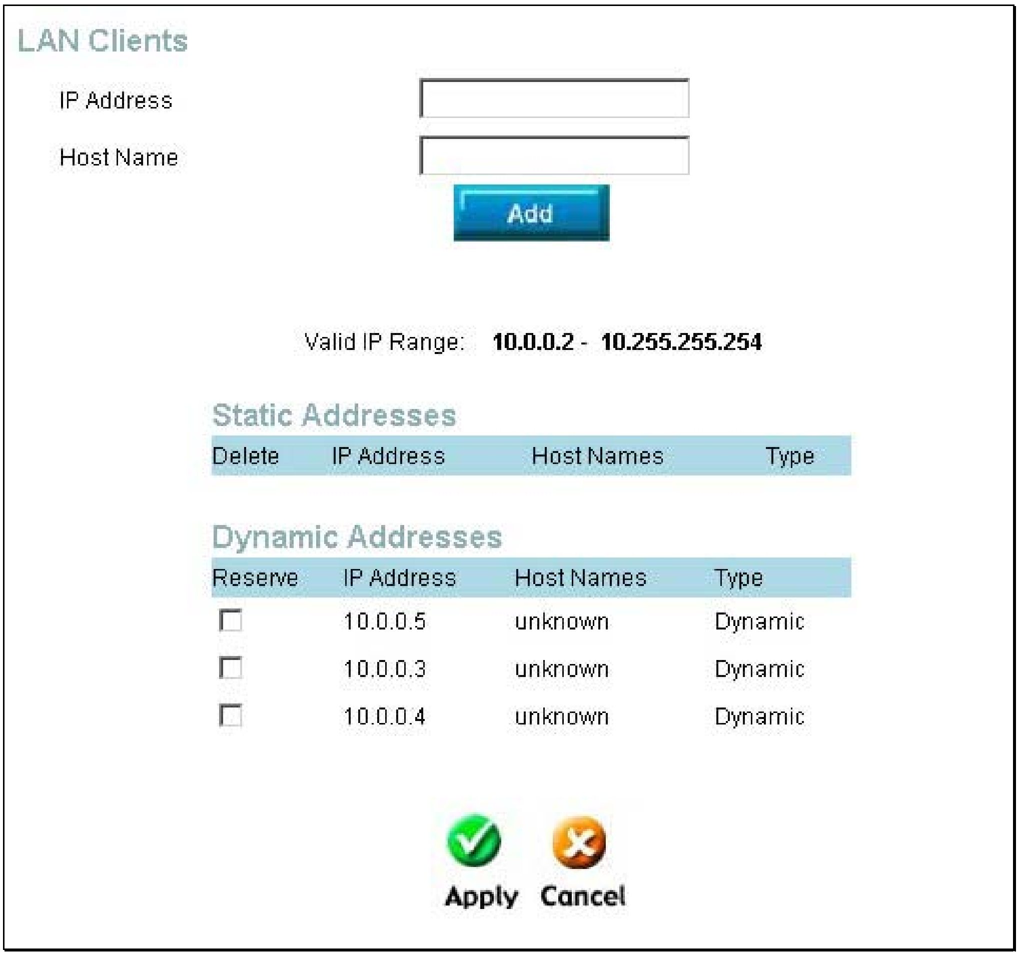
Note

Some applications require multiple TCP or UDP ports to function properly. Applications such as Internet gaming, video conferencing, and Internet telephony are some examples of applications that often require multiple connections. These applications often conflict with NAT, and therefore require special handling. See the discussion of DMZ configuration below.

LAN Clients

The LAN Clients menu is used when establishing Port Forwarding, Access Control and Advanced Security rules for IP addresses on the LAN. This menu can be accessed directly by clicking on the **LAN Clients** button or hyperlink in the **Advanced** setup menu. You can also click on the New IP button located in the Port Forwarding, Access Control and Advanced Security menus to access this menu. In order to use these advanced features it is necessary to have IP addresses available for configuration. If there are no IP addresses listed in the LAN Clients menu, it will not be possible to configure Port Forwarding, Access Control and Advanced Security.

Use the LAN Clients menus to add or delete static IP addresses for the advanced functions mentioned above, or to Reserve a Dynamically assigned IP address for an advanced function. Dynamically assigned IP addresses will only be listed if DHCP is enabled on the Router.



LAN Clients

IP Address

Host Name

Add

Valid IP Range: **10.0.0.2 - 10.255.255.254**

Static Addresses

Delete	IP Address	Host Names	Type

Dynamic Addresses

Reserve	IP Address	Host Names	Type
□	10.0.0.5	unknown	Dynamic
□	10.0.0.3	unknown	Dynamic
□	10.0.0.4	unknown	Dynamic

LAN Clients window

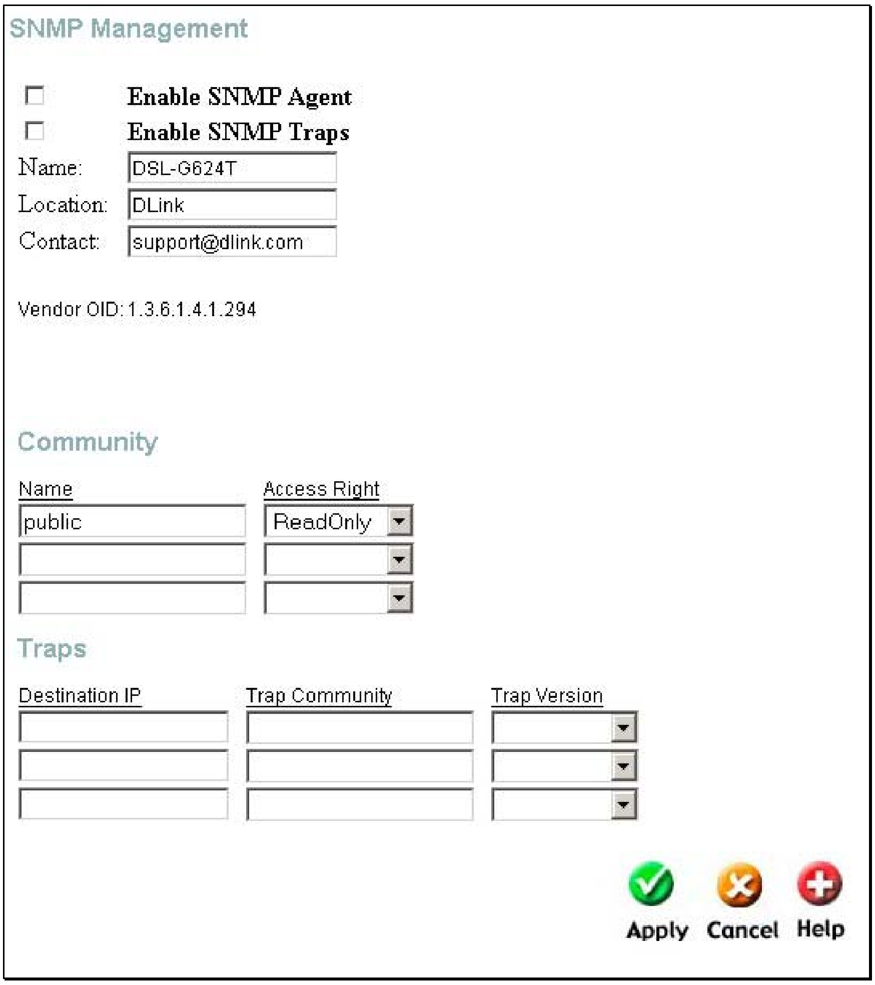
To add a static IP address to the list of available IP addresses, type an IP address that falls within the range a available IP addresses and click on the **Add** button. In the example above, available addresses range from 10.0.0.1 to 10.255.255.254. Any addresses added will appear in the list of **Static Addresses** available for advanced configuration. These addresses can then be used in the other Port Forwarding, Access Control and Advanced Security menus.

To delete an IP address from the list of Static Addresses, click the **Delete** box for the address or addresses you want to eliminate and click on the **Apply** button.

Dynamically assigned IP addresses may be reserved so that the LAN IP address for the device does not expire. This will create a permanent entry for the device in the ARP table and in effect, it becomes a static IP address. Click to check the **Reserve** box for the address or addresses you want to reserve and click the **Apply** button. These reserved addresses will no longer be available for DHCP assignment and will be listed in the Static IP Addresses table.

SNMP

SNMP (Simple Network Management Protocol) is a widely used network monitoring and control protocol that reports activity on each network device to the administrator of the network. SNMP can be used to monitor traffic and statistics of the router. SNMP enables network management stations to read and modify the settings of gateways, routers, switches, and other network devices. Use SNMP to configure system features for proper operation, performance monitoring, and detection of potential problems in the Router or network. The DSL-G624T supports SNMP v1 and SNMP v2c.



SNMP Management

□ Enable SNMP Agent

□ Enable SNMP Traps

Name: DSL-G624T

Location: DLink

Contact: support@dlink.com

Vendor OID: 1.3.6.1.4.1.294

Community

Name	Access Right
public	ReadOnly

Traps

Destination IP	Trap Community	Trap Version

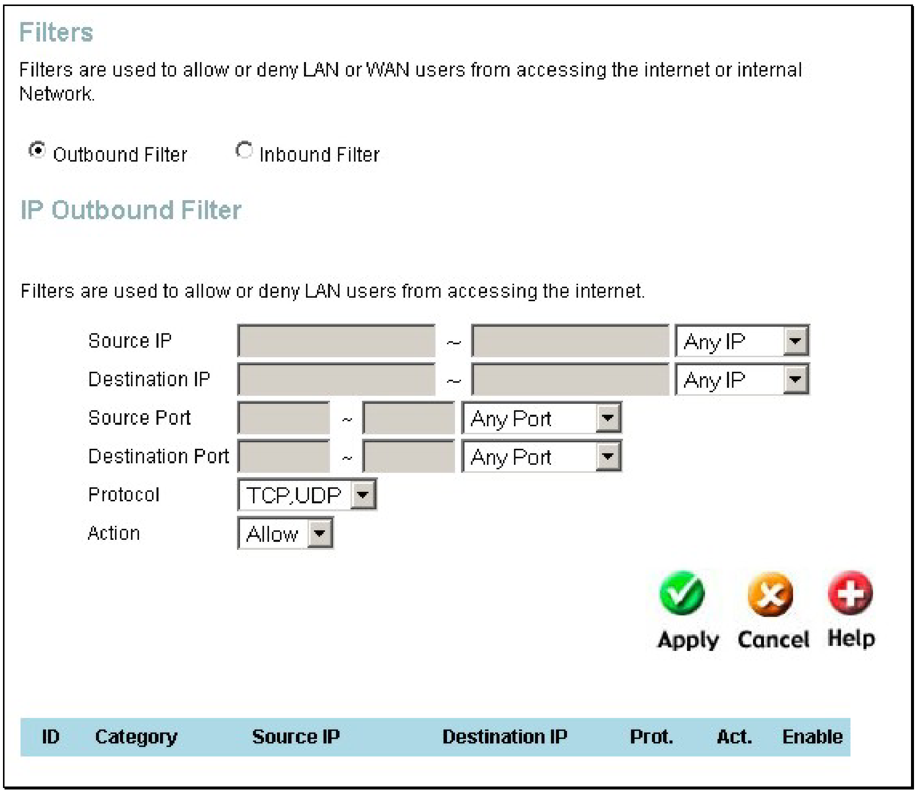
SNMP Management window

Under **SNMP Management**, enable or disable **SNMP Agent** or **SNMP Traps** by using the check boxes. An SNMP Agent is software that runs locally on the device. A defined set of variables (managed objects) is maintained by the SNMP agent and used to manage the device. Traps are messages that alert network personnel of events that occur on the Switch. The Router generates traps for these events and sends them to the trap recipient (or network manager). In the **Name**, **Location** and **Contact** fields, enter the appropriate information of the Network Administrator. Under **Community,** enter the name of an SNMP community string that defines the relationship between the SNMP manager and an agent. The community string acts like a password to permit or deny access to an agent on the Router. The defining characteristic associated with the community string is the **Access Right**. The agent's access right can be set as either read/write or read-only. Under **Traps** enter the **Destination IP address** and **Trap Community Name** so that the agent will send traps to this management server. The **Trap Version** can also be set to either *SNMP V1* (to specify that SNMP version 1 will be used) or *SNMPv2c*, which supports both centralized and distributed network management strategies. *SNMP V2c* includes improvements in the Structure of Management Information (SMI) and adds some security features.

Filters

Filter rules in the Router are put in place to allow or block specified traffic. The Filter Rules however can be used in a single direction to examine and then Allow or Deny traffic for Inbound (WAN to LAN) or Outbound (LAN to WAN) routed data. The rules based on IP address and TCP/UDP port.

Configure the filter rules as desired and click the **Apply** button to create the rule. The newly created rule appears listed in the Outbound Filter List at the bottom of the menu. The table below describes the various parameters that are configured for the filter rules.



Filters

Filters are used to allow or deny LAN or WAN users from accessing the internet or internal Network.

● Outbound Filter ○ Inbound Filter

IP Outbound Filter

Filters are used to allow or deny LAN users from accessing the internet.

Source IP		~		Any IP	
Destination IP		~		Any IP	
Source Port		~		Any Port	
Destination Port		~		Any Port	
Protocol	TCP,UDP				
Action	Allow				

ID	Category	Source IP	Destination IP	Prot.	Act.	Enable

Filters Configuration Menu

To modify any previously created filter rule, click on the note pad icon in the right hand column of the Filter List for the set you want to configure. Adjust the settings as desired and click the **Apply** button to put the new settings into effect.

First determine the direction of the traffic you want the rule to filter. To filter WAN to LAN traffic, select the **Inbound Filter** option. Any new Inbound Filter rules created will appear in the list. Likewise, should you to filter LAN to WAN traffic, create an **Outbound Filter** rule.

Note

The Service Filtering feature of the Firewall may interfere rules configured in the Filters menu. For example, FTP packets are not allowed through from the external network by default. See the Firewall section below for details.

The parameters described below are used to set up filter rules.

Parameter	Description
Source IP	For an Outbound Filter, this is the IP address or IP addresses on your LAN for which you are creating the filter rule. For an Inbound Filter, this is the IP address or IP addresses for which you are creating the filter rule. You can opt to indicate a *Mask Range*, a *Single IP*, an *IP Range* or *Any IP* from the pull-down menu. Choosing Any IP will apply the rule to all WAN or all LAN IP addresses depending on which type of rule (Inbound or Outbound) is being configured.

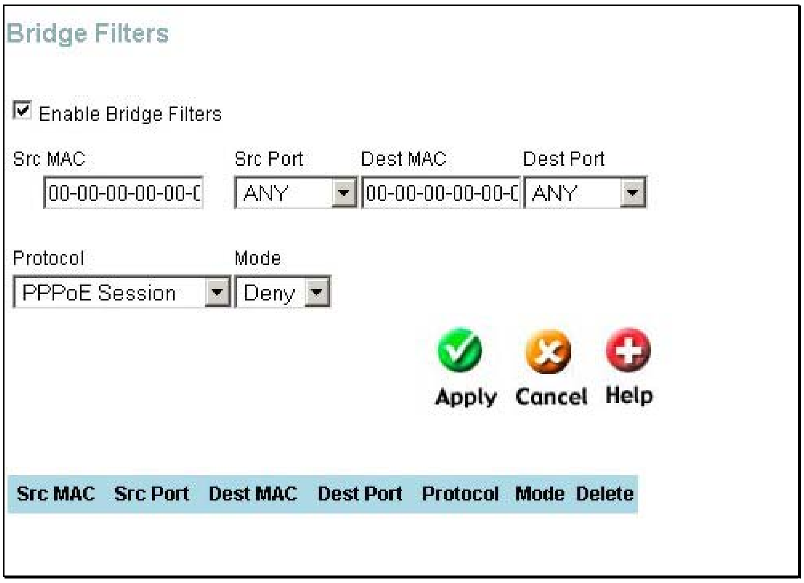
Destination IP	Where the Destination IP address resides also depends on if you are configuring an Inbound or Outbound filter rule. You can opt to indicate a *Mask Range*, a *Single IP*, an *IP Range* or *Any IP* from the pull-down menu.
Source Port	The Source Port is the TCP/UDP port on either the LAN or WAN depending on if you are configuring an Outbound or Inbound Filter rule. Select one of the following options from the pull-down menu to define a *Any Port, Single Port*, *Port Range* or *Safe Range* (ports above 1024).
Destination Port	The Destination Port is the TCP/UDP port on either the LAN or WAN depending on if you are configuring an Outbound or Inbound Filter rule. Select one of the following options from the pull-down menu to define a *Any Port, Single Port*, *Port Range* or *Safe Range* (ports above 1024).
Protocol	Select the transport protocol (*TCP*, *UDP* or *All*) that will be used for the filter rule.
Action	Select to *Allow* or *Deny* transport of the data packets according to the criteria defined in the rule. Packets that are allowed are routed to their destination; packets that are denied are blocked.

Click the **Apply** button to put the new rule into effect. Any filter rule configured in the menu will appear in the Filters List with the new settings. The Router must save the new settings and reboot before the new rules are applied.

Bridge Filters

Bridge filters are used to block or allow various types of packets through the WAN interface. This may be done for security or to improve network efficiency. The rules are configured for individual devices based on MAC address. Filter rules can be set up for source, destination or both. You can set up filter rules and disable the entire set of rules without loosing the rules that have been configured.

Enter the **Advanced** menu and click **Bridge Filters** button in the wizard column to open the Bridge Filters page.



Bridge Filters

☑ Enable Bridge Filters

Src MAC	Src Port	Dest MAC	Dest Port
00-00-00-00-00-0	ANY	00-00-00-00-00-0	ANY

Protocol	Mode
PPPoE Session	Deny

Src MAC	Src Port	Dest MAC	Dest Port	Protocol	Mode	Delete

Bridge Filters window

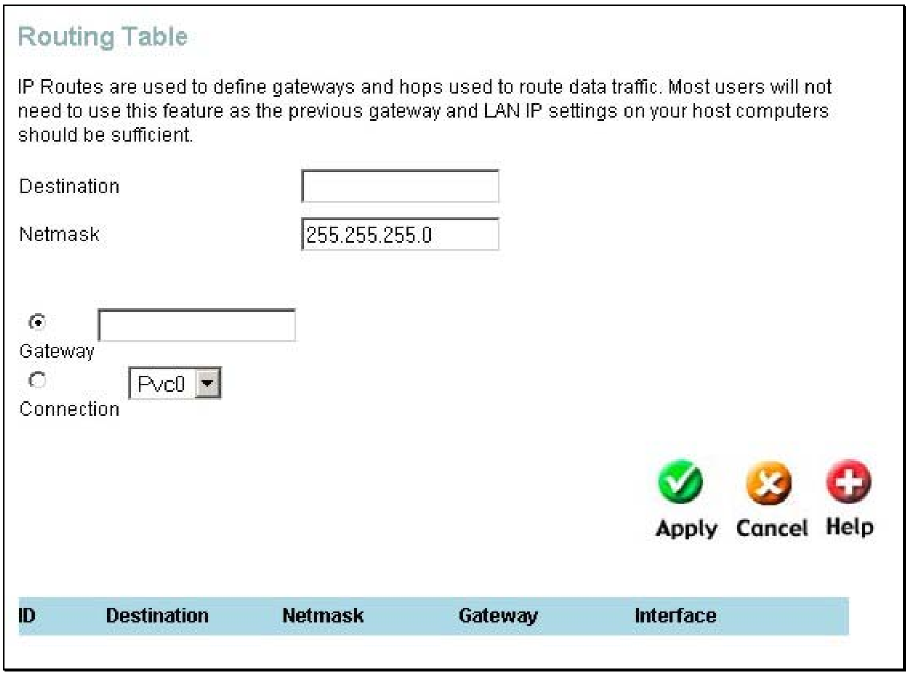
To add a bridge filter rule, check **Enable Bridge Filters**, type in a Source MAC, a Destination MAC or both in the entry fields, and click the **Add** button. To edit an existing rule, select the rule by clicking the **Edit** radio button. The rule will appear in the entry fields above as it is currently configured. Make the desired changes and click the **Add** button. To remove a bridge filter from the table in the bottom half of the window, click to select the corresponding **Delete** box, and then click **Apply**.

To save these configuration changes permanently, enter the **System Commands** page in **Tools** menu, click **Save All** button to save the configuration setting.

The protocols that may be specifically allowed or denied to pass through the WAN interface are the following: **IPv4, IPv6, RARP, IPX-Ethernet, PPPoE Discovery** and **PPPoE Session**.

Routing

Use the **Routing Table** to specify a route used for data traffic within your Ethernet LAN or to route data on the WAN. This is used to specify that all packets destined for a particular network or subnet use a predetermined gateway.



Routing Table

IP Routes are used to define gateways and hops used to route data traffic. Most users will not need to use this feature as the previous gateway and LAN IP settings on your host computers should be sufficient.

Destination

Netmask 255.255.255.0

● Gateway

○ Connection Pvc0

ID	Destination	Netmask	Gateway	Interface

Routing Table

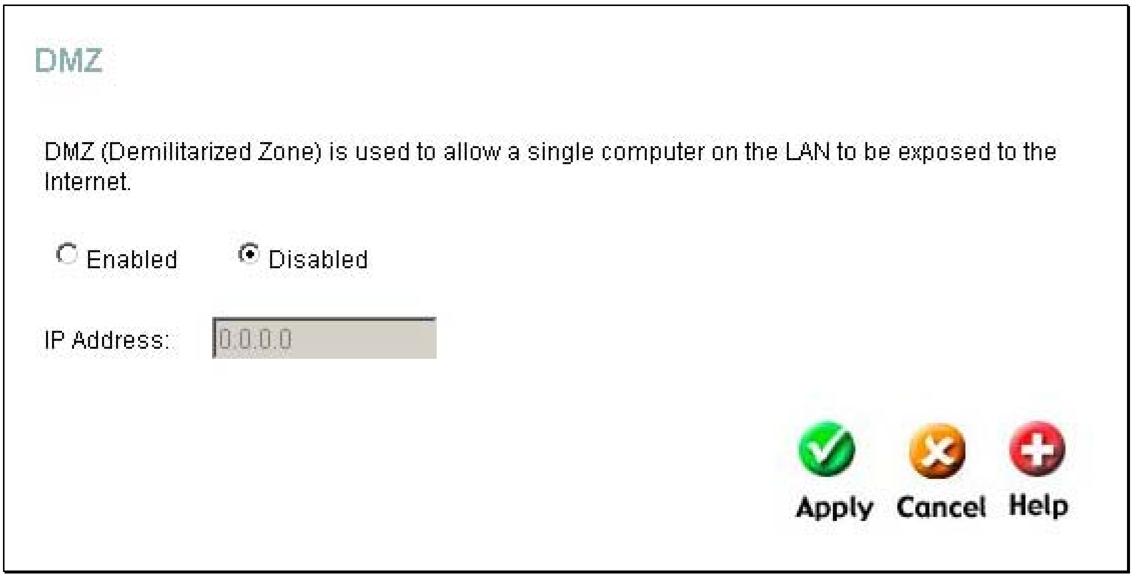
To add a static route to a specific destination IP on the local network, enter a **Destination** IP address, **Netmask**, then click the **Gateway** radio button and type in the Gateway's IP address. Click **Apply** to enter the new static route in the table below. The route becomes active immediately upon creation.

To add a static route to a specific destination IP on the WAN, click the Connection radio button and choose a connection from the pull-down menu, then enter a **Destination** IP address and **Netmask**. Click **Apply** to enter the new static route in the table below. The route becomes active immediately upon creation and will appear in the table at the bottom of the screen.

To remove a static route from the table in the bottom half of the window, choose to **Delete** it from the table and click the **Apply** button. Remember to save the configuration changes.

DMZ

Since some applications are not compatible with NAT, the Router supports use of a DMZ IP address for a single host on the LAN. This IP address is not protected by NAT and will therefore be visible to agents on the Internet with the right type of software. Keep in mind that any client PC in the DMZ will be exposed to various types of security risks. If you use the DMZ, take measures (such as client-based virus protection) to protect the remaining client PCs on your LAN from possible contamination through the DMZ.



DMZ

DMZ (Demilitarized Zone) is used to allow a single computer on the LAN to be exposed to the Internet.

○ Enabled ● Disabled

IP Address: 0.0.0.0

DMZ IP address configuration

To designate a DMZ IP address, select the **Enabled** radio button, type in the **IP Address** of the server or device on your LAN, and click the **Apply** button. To remove DMZ status from the designated IP address, select the Disabled radio button and click Apply. It will be necessary to save the settings and reboot the Router before the DMZ is activated.

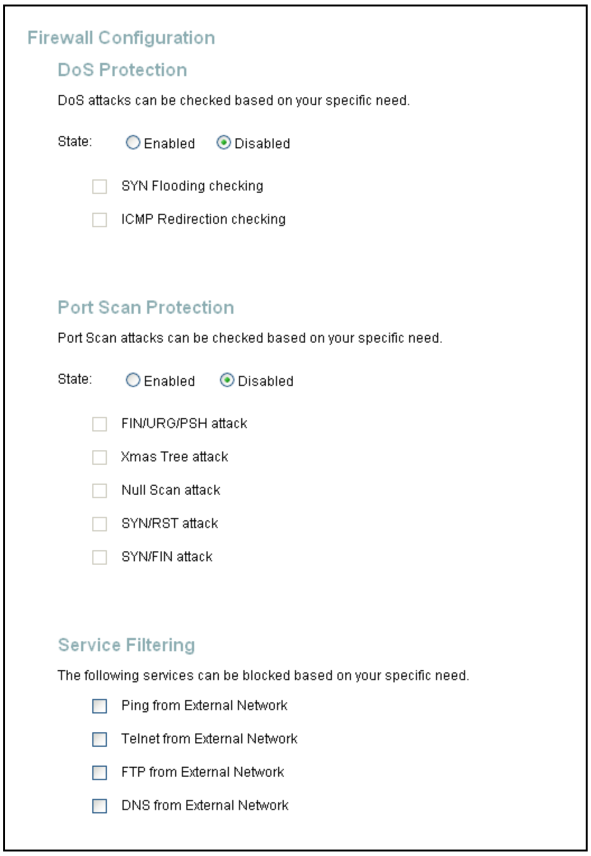
Firewall

The Firewall Configuration menu allows the Router to enforce specific predefined policies intended to protect against certain common types of attacks. There are two general types of protection (DoS, Port Scan) that can be enabled on the Router, as well as filtering for specific packet types sometimes used by hackers.

You can choose to **Enable** or **Disable** protection against a customized basket of attack and scan types. To enable **DoS Protection** or **Port Scan Protection**, select the **Enable** radio button for the protection type and click in the selection boxes for the various types of protection listed under each.

Note

Service Filtering may interfere with other configurations such as DHCP Relay or Remote Management via Telnet.



Firewall Configuration

DoS Protection

DoS attacks can be checked based on your specific need.

State: ○ Enabled ● Disabled

□ SYN Flooding checking

□ ICMP Redirection checking

Port Scan Protection

Port Scan attacks can be checked based on your specific need.

State: ○ Enabled ● Disabled

□ FIN/URG/PSH attack

□ Xmas Tree attack

□ Null Scan attack

□ SYN/RST attack

□ SYN/FIN attack

Service Filtering

The following services can be blocked based on your specific need.

□ Ping from External Network

□ Telnet from External Network

□ FTP from External Network

□ DNS from External Network

Firewall Configuration Menu

When DoS, Port Scan, or Service Filtering Protection is enabled, it will create a firewall policy to protect your network against the following:

Dos Protection	Port Scan Protection	Service Filtering
SYN Flood check	FIN/URG/PSH attack	Ping from External Network
ICMP Redirection check	Xmas Tree Scan	Telnet from External Network
	Null Scan attack	FTP from External Network
	SYN/RST attack	DNS from External Network
	SYN/FIN Scan	

A DoS "denial-of-service" attack is characterized by an explicit attempt by attackers to prevent legitimate users of a service from using that service. Examples include: attempts to "flood" a network, thereby preventing legitimate network traffic, attempts to disrupt connections between two machines, thereby preventing access to a service, attempts to prevent a particular individual from accessing a service, or, attempts to disrupt service to a specific system or person.

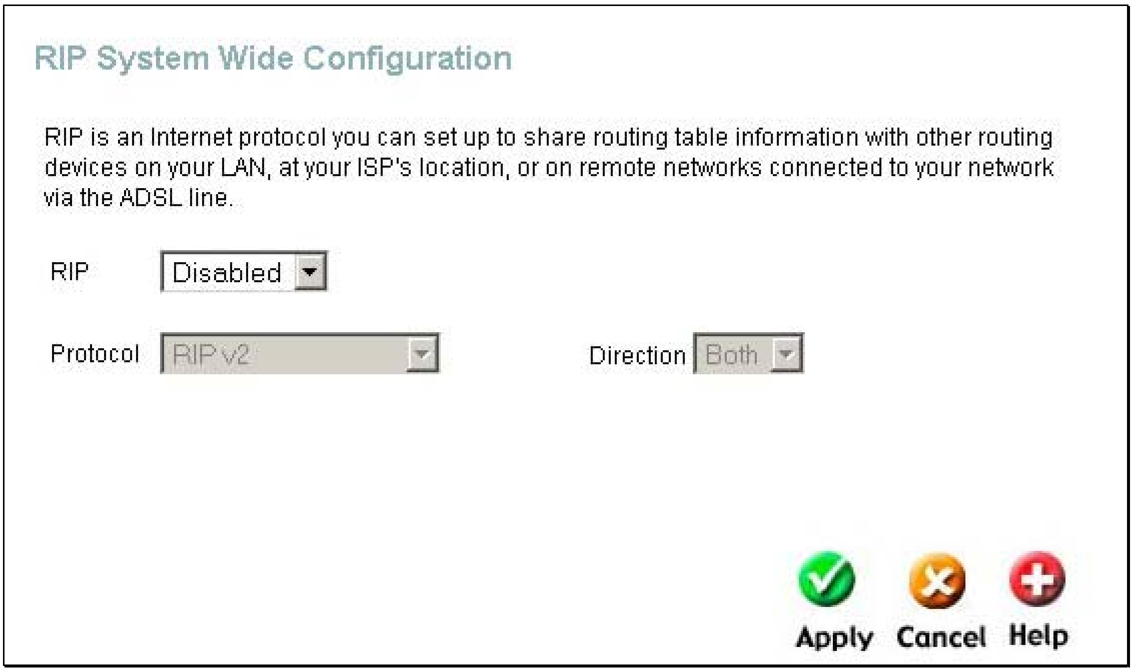
Port scan protection is designed to block attempts to discover vulnerable ports or services that might be exploited in an attack from the WAN.

The Service Filtering options allow you to block FTP, Telnet response, Pings, etc, from the external network. Check the category you want to block to enable filtering of that type of packet.

When you have selected the desired Firewall policies, click the **Apply** button to enforce the policies. Remember to save any configuration changes.

RIP

The Router supports RIP v1 and RIP v2 used to share routing tables with other Layer 3 routing devices on your local network or remote LAN.



RIP System Wide Configuration

RIP is an Internet protocol you can set up to share routing table information with other routing devices on your LAN, at your ISP's location, or on remote networks connected to your network via the ADSL line.

RIP: Disabled

Protocol: RIP v2

Direction: Both

Dynamic Routing (RIP) menu

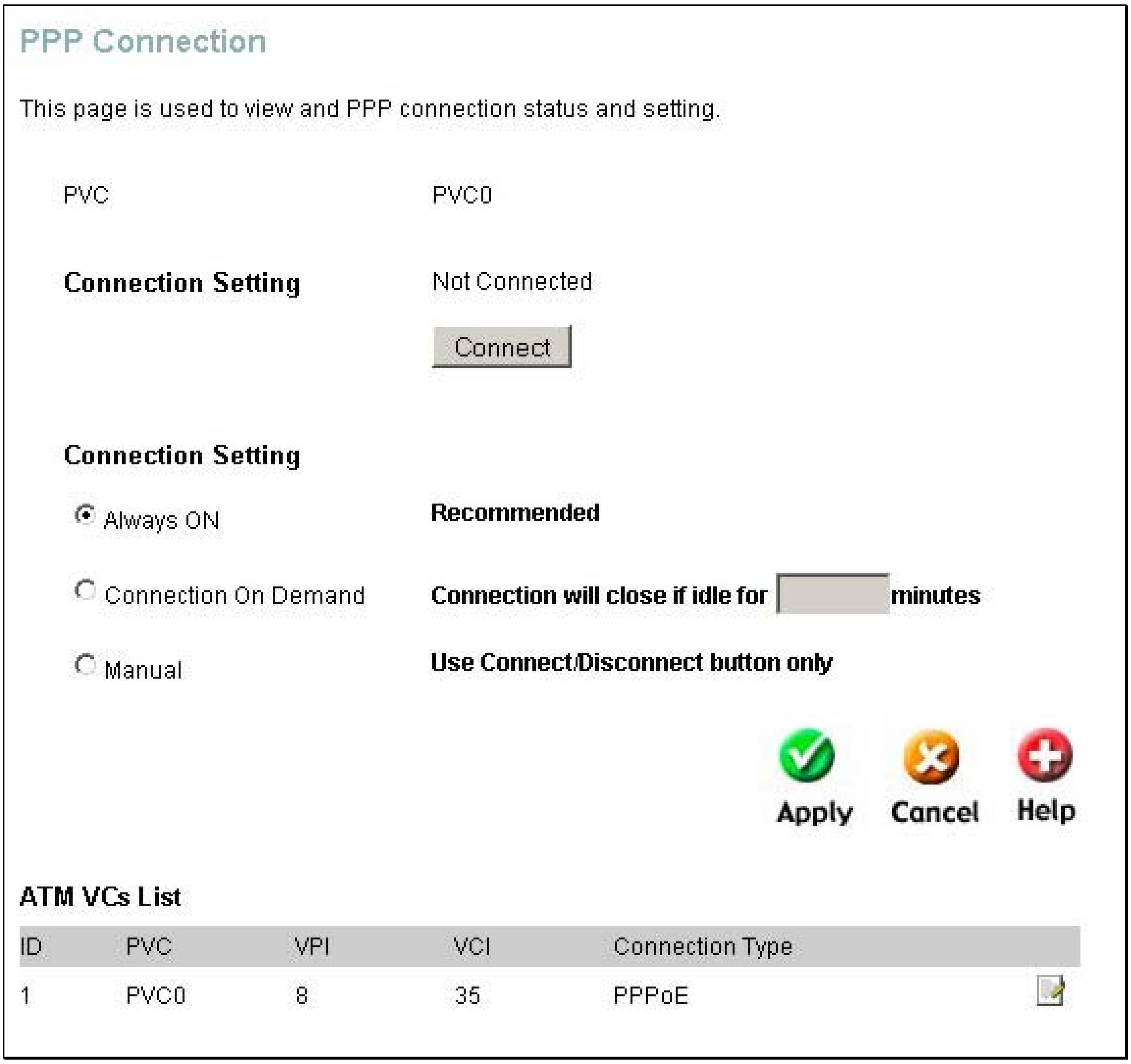
To enable RIP, select *Enabled* from the **RIP** pull-down menu, select the **Protocol** (*RIPv1* and *RIPv1 Compatible*) and **Direction** (*In*, *Out*, or *Both*), and click **Apply**.

The RIPv1 Compatible option will transmit RIPv2 broadcast packets and receive both RIP v1 and RIP v2 packets.

The direction configuration refers to the RIP request. Select In to allow RIP requests from other devices. Select Out to instruct the Router to make RIP requests for routing tables from other devices. Select Both to share routing tables in both directions.

PPP

When the WAN connection is configured for either PPPoA or PPPoE, you can configure the Router's PPP session to remain on all the time, or to disconnect after some period of no activity. You may also choose to instruct the Router to connect each time you want to access the WAN or the Internet.



PPP Connection

This page is used to view and PPP connection status and setting.

PVC	PVC0
Connection Setting	Not Connected Connect

Connection Setting

● Always ON	**Recommended**
○ Connection On Demand	**Connection will close if idle for** ____ **minutes**
○ Manual	**Use Connect/Disconnect button only**

ATM VCs List

ID	PVC	VPI	VCI	Connection Type
1	PVC0	8	35	PPPoE

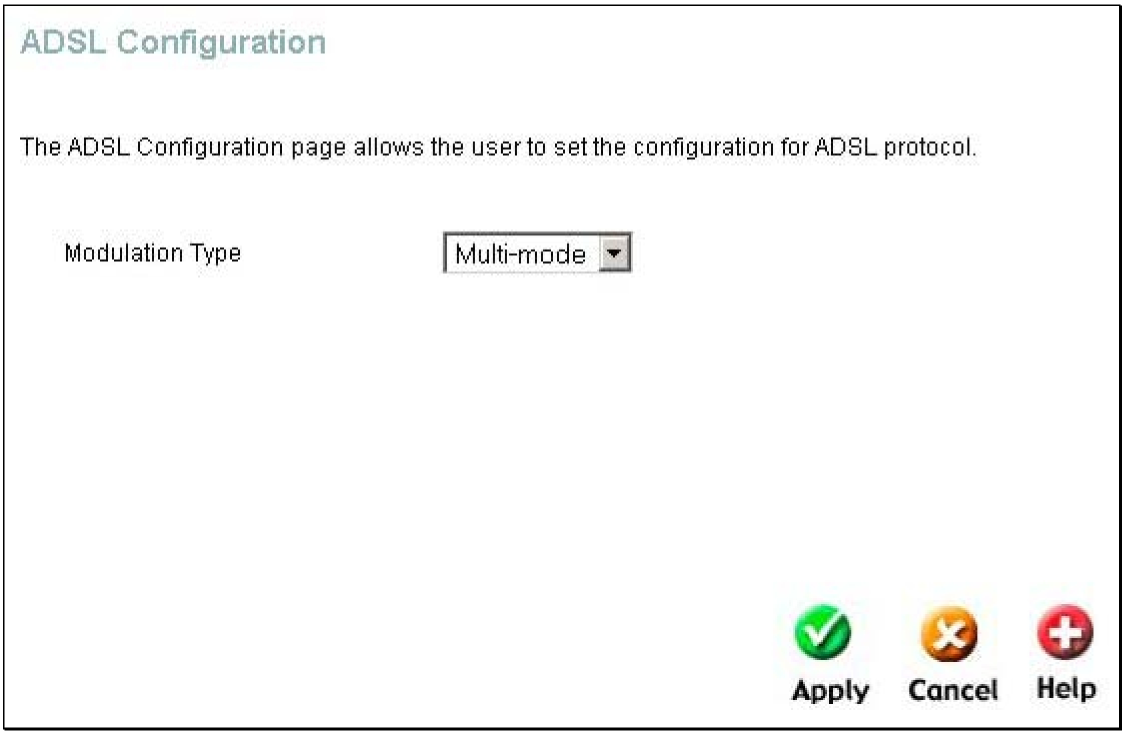
PPP Connection settings menu

If you want the Internet or WAN connection to be available any time a host on your LAN requests access, select the **Always On** option.

If your ISP account is billed according to the amount of time the Router is connected, choose the **Connection On Demand** option. You can configure an idle time in minutes to disconnect the PPP connection after a period of inactivity. This will discontinue the PPP session and require a few seconds to reconnect when a host requests access to the WAN. Alternatively you can choose the **Manual** option and use the **Connect** button to initiate a PPP connection each time you want to use the Router to access the WAN. If you use the Manual option, you must return to this menu and click the **Disconnect** button to terminate the PPP session.

ADSL

The ADSL Configuration page allows the user to set the configuration for ADSL protocols. For most ADSL accounts the default settings *Multi-mode* will work. This configuration works with all ADSL implementations. If you have been given instructions to change the Modulation method used, select the desired option *T1.413*, *G.dmt*, or *G.lite* and click the **Apply** button.



ADSL Configuration

The ADSL Configuration page allows the user to set the configuration for ADSL protocol.

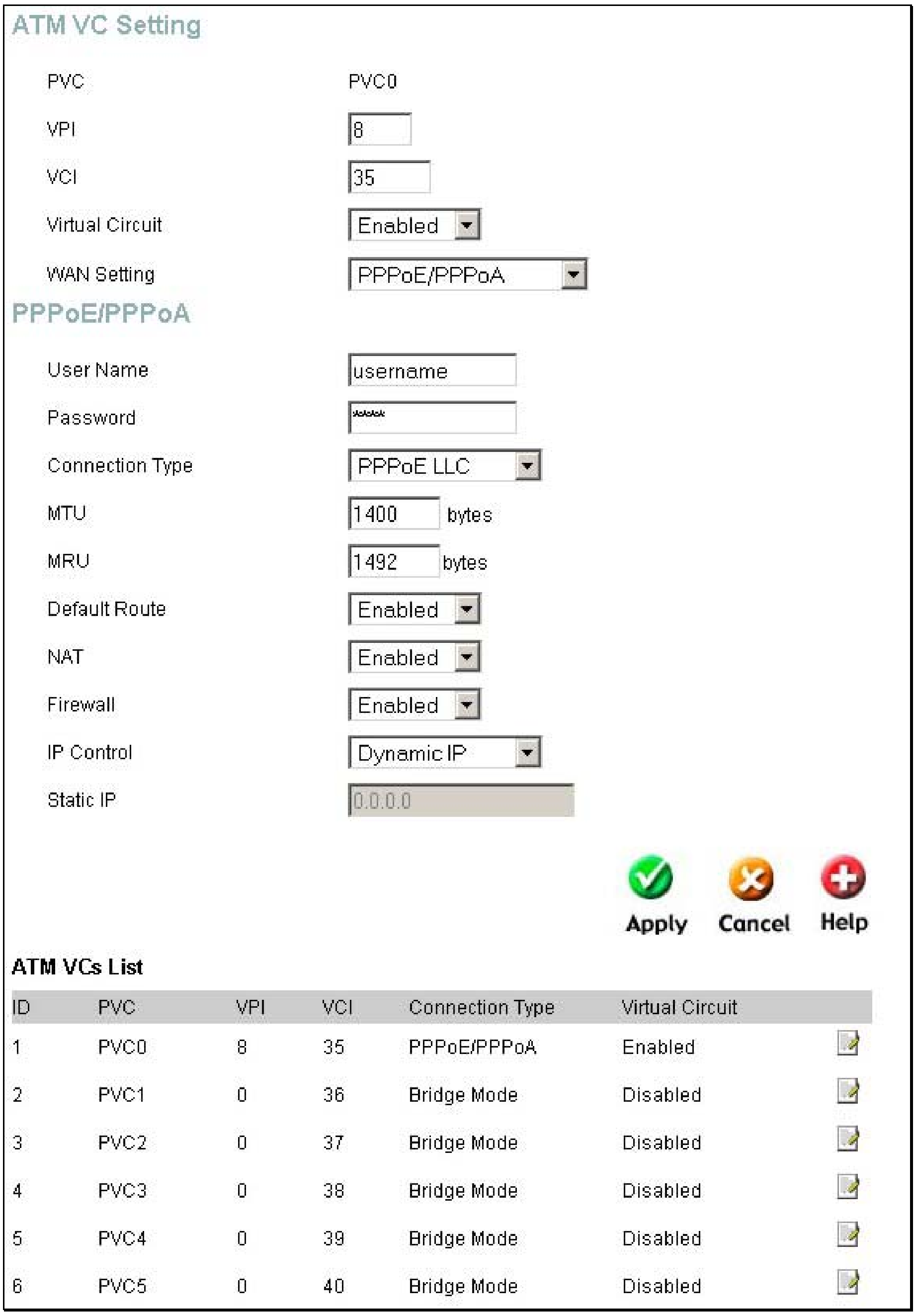
Modulation Type: Multi-mode

ADSL Modulation Configuration

ATM VCC

The ATM Virtual Circuit connection menu is used to configure the WAN connection. If you are using multiple PVCs, you can change the configuration of any PVC in this menu. To create new or additional PVCs, read the section below on Multiple PVCs.

This menu can be used as an alternative menu to configure the same settings found on the WAN menu in the Home directory.



ATM VC Setting

PVC	PVC0
VPI	8
VCI	35
Virtual Circuit	Enabled
WAN Setting	PPPoE/PPPoA

PPPoE/PPPoA

User Name	username
Password	****
Connection Type	PPPoE LLC
MTU	1400 bytes
MRU	1492 bytes
Default Route	Enabled
NAT	Enabled
Firewall	Enabled
IP Control	Dynamic IP
Static IP	0.0.0.0

ATM VCs List

ID	PVC	VPI	VCI	Connection Type	Virtual Circuit
1	PVC0	8	35	PPPoE/PPPoA	Enabled
2	PVC1	0	36	Bridge Mode	Disabled
3	PVC2	0	37	Bridge Mode	Disabled
4	PVC3	0	38	Bridge Mode	Disabled
5	PVC4	0	39	Bridge Mode	Disabled
6	PVC5	0	40	Bridge Mode	Disabled

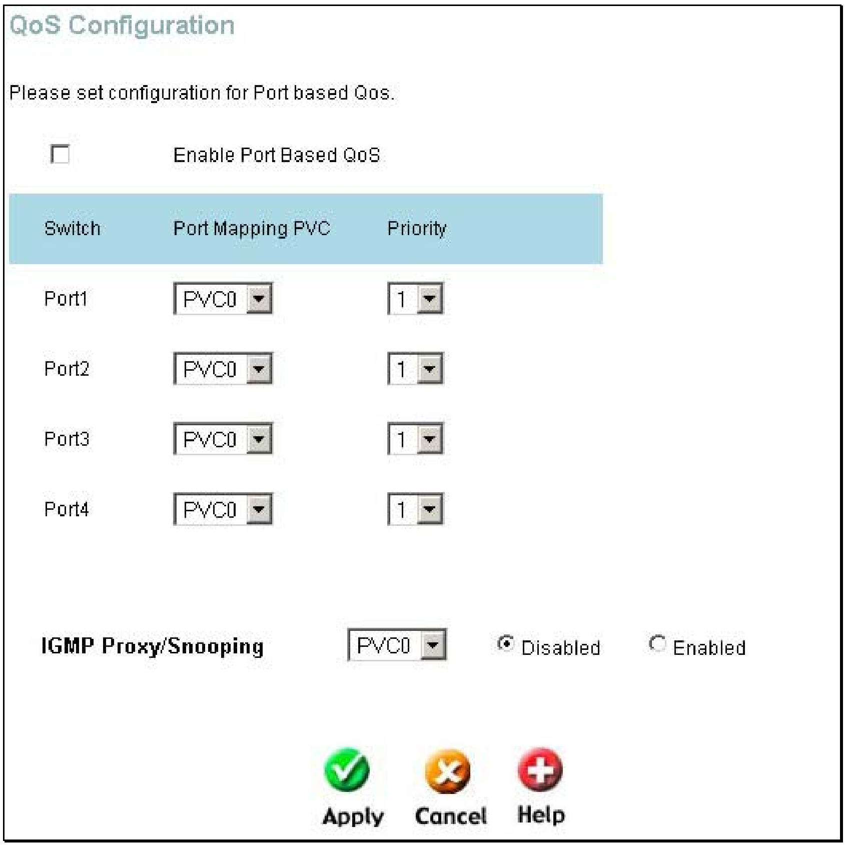
ATM Virtual Circuit configuration menu

To configure an existing PVC configuration set, click the corresponding notepad icon in the right-hand column of the ATM VCs List. The PVCs current settings appear above in the entry fields of the ATM VC Settings menu. Configure the appropriate settings and click the **Apply** button to put the new settings into effect.

QoS

QoS or Quality of Service is used to allot priority from the router. This is done by allotting a priority from a port to a PVC as shown in the screen below. There are four priorities for each QoS configuration. 1 denotes the highest priority while 4 is the lowest.

The **IGMP Proxy/Snooping** is **Disabled** by default. This setting will not allow IGMP (Internet Group Management Protocol) packets to be forwarded to the LAN. IGMP is used to manage multicasting on TCP/IP networks, most users will not need to enable this. Some ISPs use IGMP to perform remote configuration for client devices, such as the Router. If you are unsure, check with your ISP. To enable IGMP service to the LAN interface, select **Enabled** and click the **Apply** button.



QoS Configuration

Please set configuration for Port based Qos.

□ Enable Port Based QoS

Switch	Port Mapping PVC	Priority
Port1	PVC0	1
Port2	PVC0	1
Port3	PVC0	1
Port4	PVC0	1

IGMP Proxy/Snooping PVC0 ● Disabled ○ Enabled

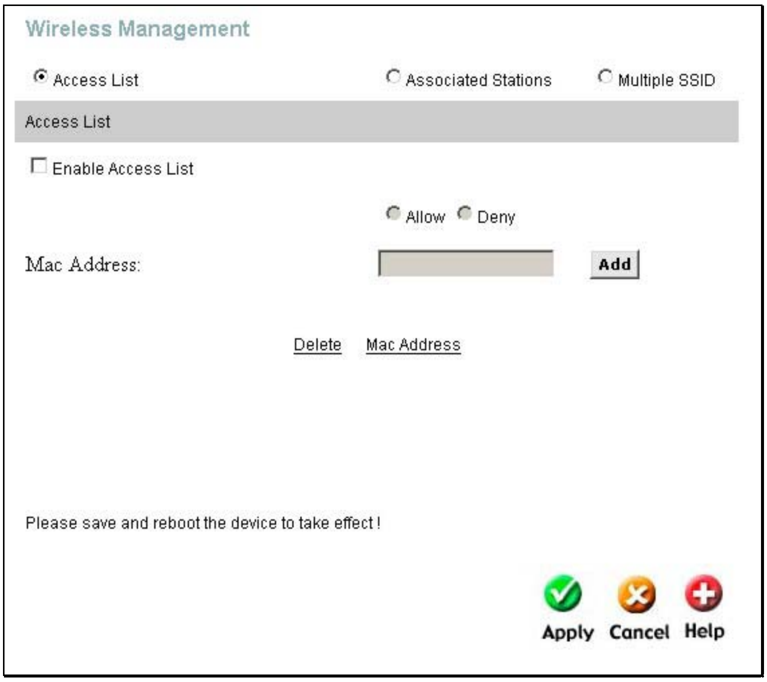
QoS Configuration screen

To set QoS for the router, first click the **Enable Port based QoS** check box at the top of the screen. Then select the PVC to associate with the corresponding port and choose a priority for this combination. The user may also enable IGMP Proxy/Snooping for each PVC at the bottom of the screen by choosing the PVC from the pull-down menu and clicking the **Enabled** radio button. Click **Apply** to set the configuration.

Wireless Management

The **Wireless Management** menu located in the **Advanced** directory is used to control MAC address access to the wireless access point and to view a list of MAC addresses that are currently associated with the access point. This menu is also be used to enable and configure use of multiple SSIDs. To use more than one SSID, WEP and WPA security must first be disabled (see below).

To view a list of stations currently associated with the access point, click the **Associated Stations** radio button.



Wireless Management

● Access List ○ Associated Stations ○ Multiple SSID

Access List

□ Enable Access List

○ Allow ○ Deny

Mac Address: Add

Delete Mac Address

Please save and reboot the device to take effect!

Wireless Management

Configure Wireless Access Control

To create a list of MAC addresses that are banned or allowed association with the wireless access point:

1. Click in the **Enable Access List** option box to select it.
2. Select the action to perform on the MAC address to be specified. Choose to **Allow** or **Ban** association.
3. Type in the **MAC Address** in the entry field provided.
4. Click the **Add** button to add the MAC address to the list. The AMC address will appear listed in the table below.
5. After compiling the list of MAC addresses as desired, click the **Apply** button to enforce access control for the MAC addresses in the list.

To remove any MAC address from the list, click the radio button in the left column of the list for the MAC address to be removed and click the **Apply** button.

Configure Multiple SSID

Multiple SSID cannot be used if the access point has either WPE or WPA enabled. This must first be disabled in the Wireless menu located in the Home directory.

To configure multiple SSID:

1. Disable WEP or WPA in the **Wireless** menu of the **Home** directory.
2. Click in the **Enable Multiple SSID** option box to select it.
3. Enter the **SSID** you want to add.
4. Click the **Add** button to add the SSID to the list.
5. Click the **Apply** button to enable the listed SSIDs.

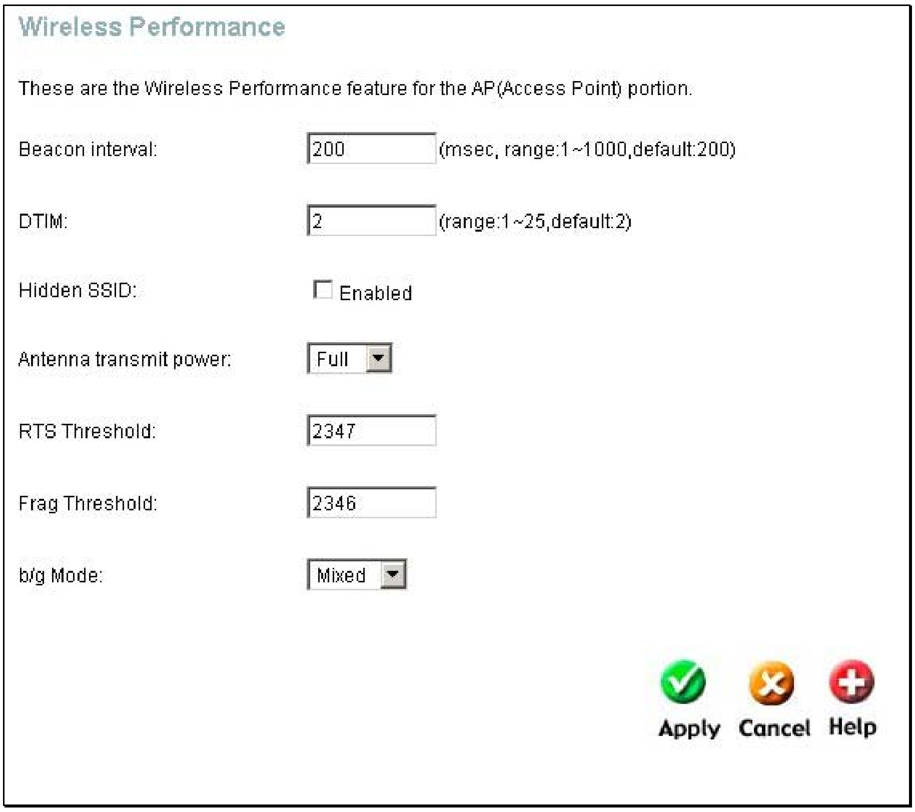
To remove an SSID from the list, click the radio button in the left column of the list for the SSID to be removed and click the **Apply** button.

Wireless Performance

If you want to tweek wireless settings, click the **Wireless Performance** menu button in the **Advanced** directory

Note

It is recommended for most users to use the default Wireless LAN Performance settings. Any changes made to these settings may adversely affect your wireless network. Under certain circumstances, changes may be benefit performance. Carefully consider and evaluate any changes to these wireless settings.



Wireless Performance

These are the Wireless Performance feature for the AP(Access Point) portion.

Beacon interval: 200 (msec, range:1~1000,default:200)

DTIM: 2 (range:1~25,default:2)

Hidden SSID: □ Enabled

Antenna transmit power: Full

RTS Threshold: 2347

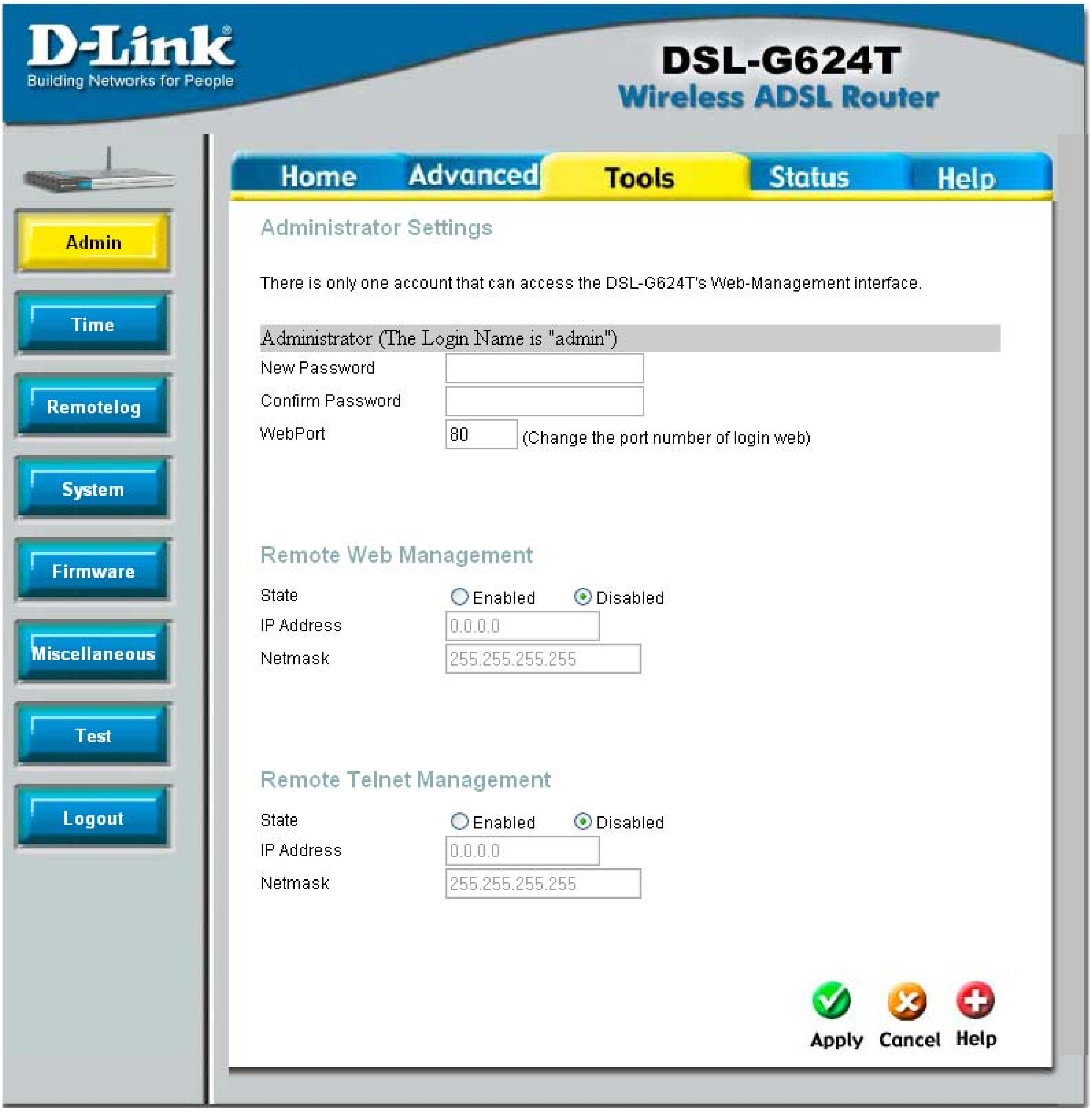
Frag Threshold: 2346

b/g Mode: Mixed

Wireless LAN Performance settings

Tools

Click the **Tools** tab to reveal the menu buttons for various functions located in this directory. The **Administrator Settings** is the first menu that appears in the Tools directory. This menu is used to change the system password used to access the web manager, to save or load Router configuration settings and to restore default settings. The functions in this and the other Tools menus are described below.



Administrator Settings

There is only one account that can access the DSL-G624T's Web-Management interface.

Administrator (The Login Name is "admin")

New Password

Confirm Password

WebPort 80 (Change the port number of login web)

Remote Web Management

State ○ Enabled ● Disabled

IP Address 0.0.0.0

Netmask 255.255.255.255

Remote Telnet Management

State ○ Enabled ● Disabled

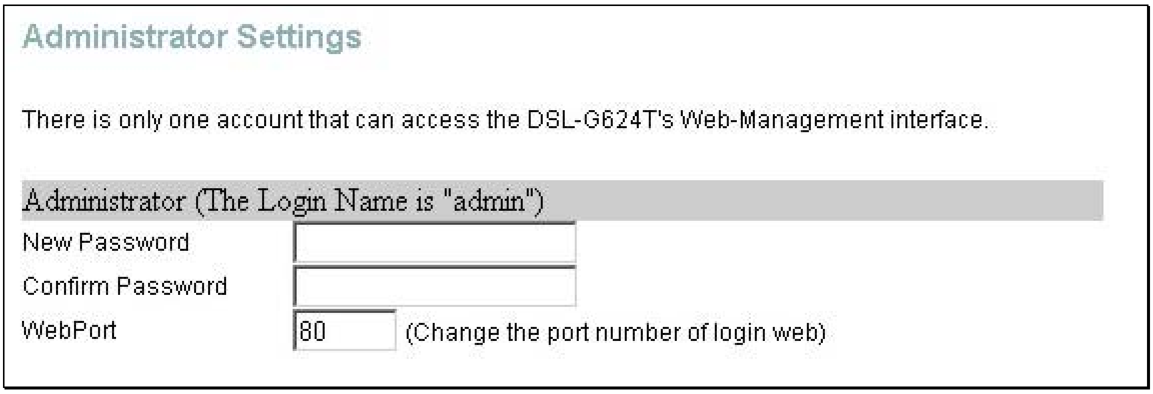
IP Address 0.0.0.0

Netmask 255.255.255.255

System Tools administrative functions

Change System Password

To change the password used to access the Router web manager, click the **Admin** button in the **Tools** directory to display the Administrator Settings menu. Under the Administrator heading, type the **New Password** and **Confirm Password** to be certain you have typed it correctly. Click the **Apply** button to activate the new password. The System User Name remains "admin", this cannot be changed using the web manager interface. Be sure to save the new setting.



Administrator Settings

There is only one account that can access the DSL-G624T's Web-Management interface.

Administrator (The Login Name is "admin")

New Password

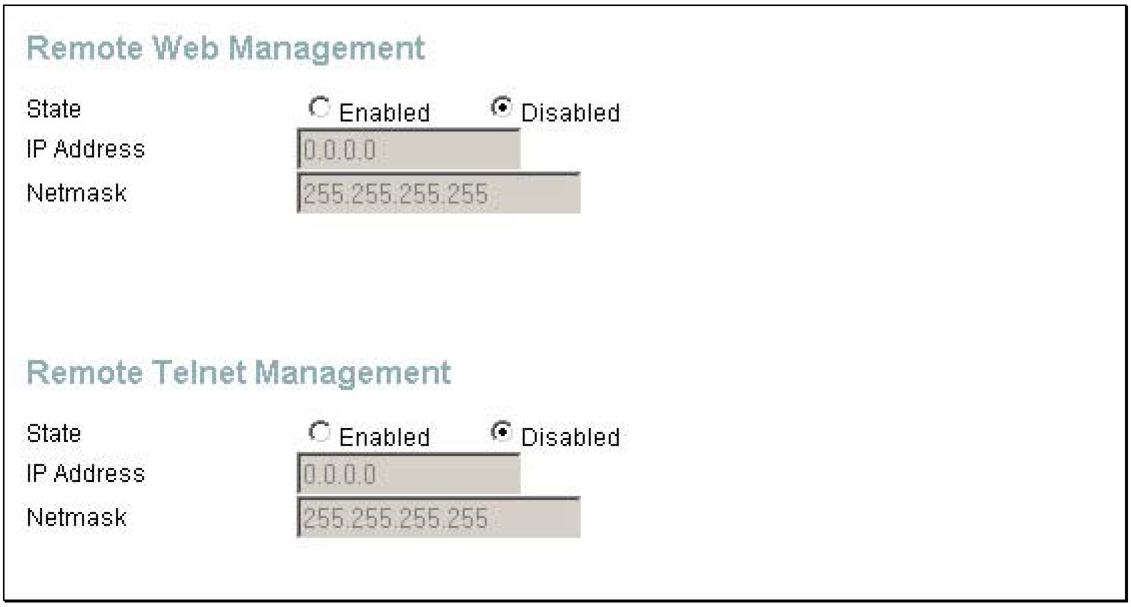
Confirm Password

WebPort 80 (Change the port number of login web)

Administrator Settings change password menu

Remote Web Management and Telnet Access

The Administrator Settings menu is also used to enable remote Telnet management and remote web management access to the Router. To enable remote management of the Router, select the **Enabled** radio button for either Remote Web or Remote Telnet Management and type the IP Address and Netmask of the remote network or system used for management. Click the **Apply** button to activate remote management from the chosen IP address. Be sure to save the new setting.



Remote Web Management

State ○ Enabled ● Disabled

IP Address 0.0.0.0

Netmask 255.255.255.255

Remote Telnet Management

State ○ Enabled ● Disabled

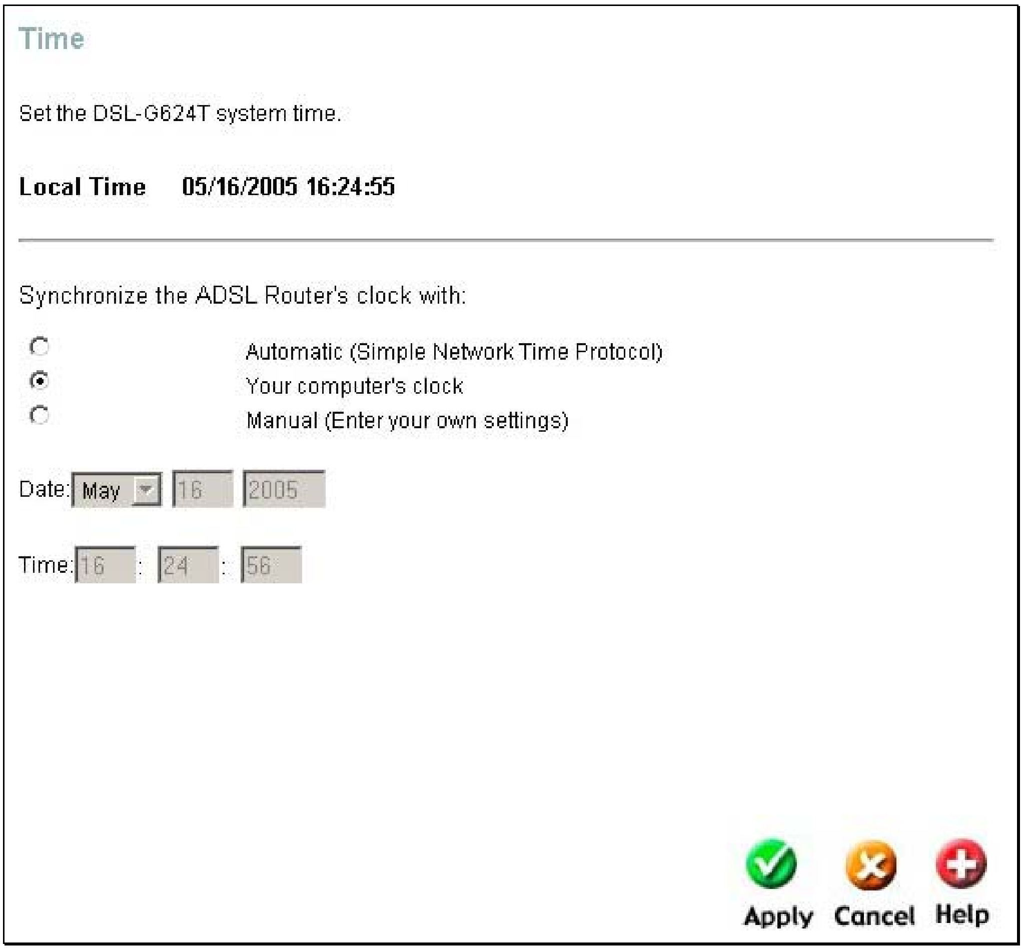
IP Address 0.0.0.0

Netmask 255.255.255.255

Remote Web And Telnet Access window

Time

The Router provides a number of options to maintain current date and time including SNTP.



Time

Set the DSL-G624T system time.

Local Time **05/16/2005 16:24:55**

Synchronize the ADSL Router's clock with:

○ Automatic (Simple Network Time Protocol)

● Your computer's clock

○ Manual (Enter your own settings)

Date: May 16 2005

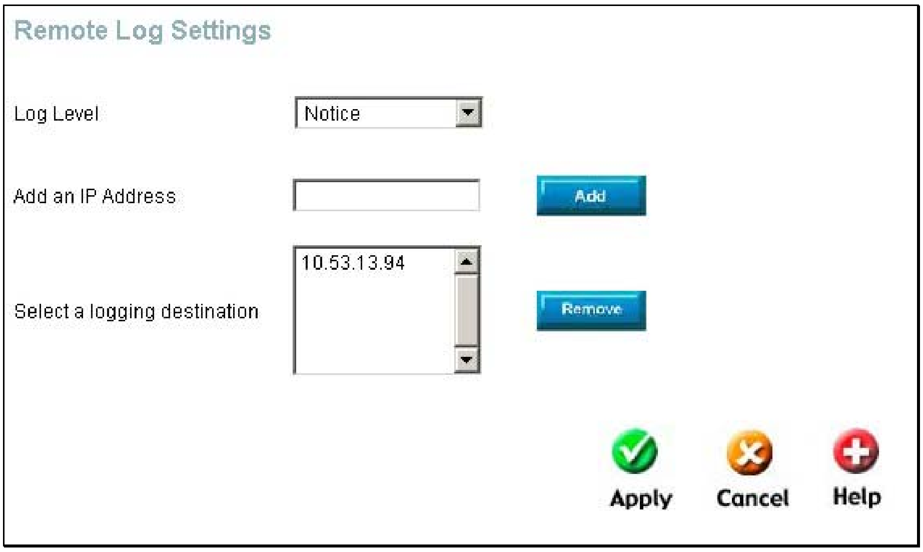
Time: 16 : 24 : 56

Time & Date Configuration

To configure system time on the Router, select the method used to maintain time. The options available include SNTP, using your computer's system clock (default) or set the time and date manually. If you opt to use SNTP, you must enter the SNTP server URL or IP address. Click the **Apply** button to set the system time.

Remote Log

The Remote Log settings screen allows the user to set up a router log recipient for events occurring on the router. The user may select the severity level of router events to be logged by a remote log recipient. There are eight levels of warnings that may be set for the router, which are **Alert**, **Critical**, **Debug**, **Error**, **Info**, **Notice**, **Panic**, and **Warning**. Any of these log level warnings may be sent to a remote IP address that may be configured in the **Add an IP Address** field and added by clicking the **Add** button. Added IP addresses will appear in the **Select a logging destination** field. Once entered into this field, the user will highlight the IP address and select the log level for router events.



Remote Log Settings

Log Level: Notice

Add an IP Address:

Select a logging destination: 10.53.13.94

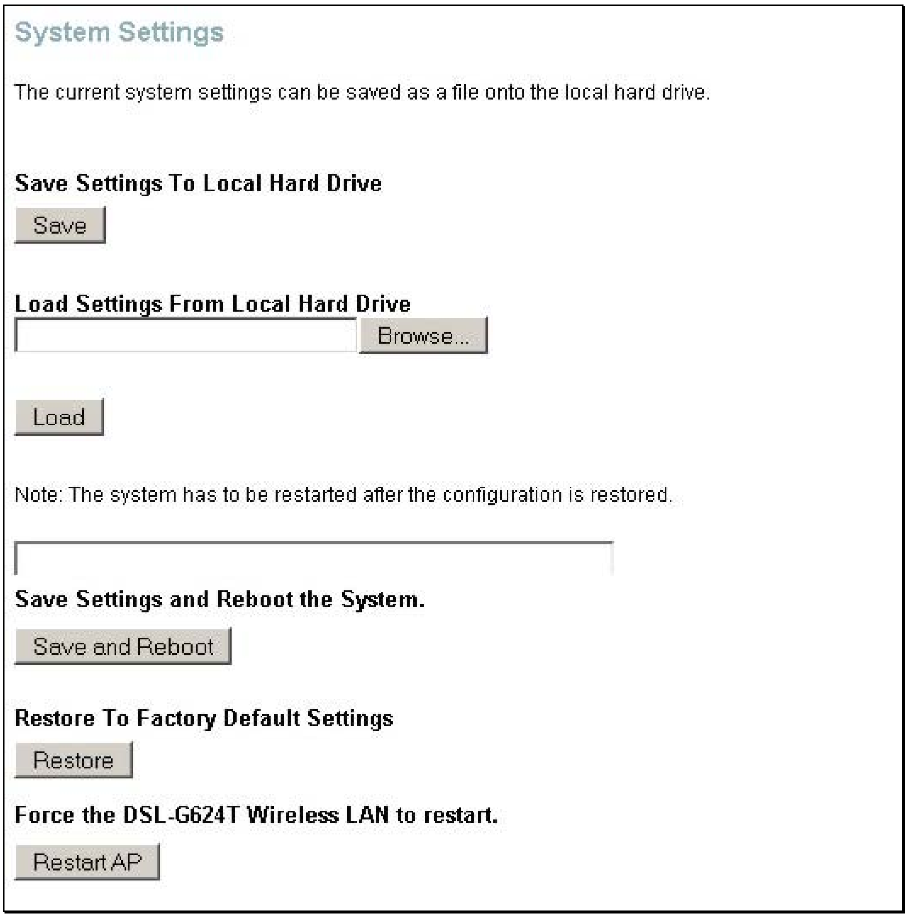
Remote Log Settings window

Once all the information has been entered click **Apply** to set the changes made.

System

Once you have configured the Router to your satisfaction, it is a good idea to back up the configuration file to your computer. To save the current configuration settings to your computer, click the **Admin** button in the **Tools** directory to display the Administrator Settings menu. Click the **Save** button to **Save Settings to Local Hard Drive**. You will be prompted to select a location on your computer to put the file. The file type is .xml (HTML) and may be named anything you wish.

To load a previously saved configuration file, click the **Browse** button and locate the file on your computer. Click the **Load** button to **Load Settings From Local Hard Drive**. Confirm that you want to load the file when prompted and the process is completed automatically. The Router will reboot and begin operating with the configuration settings that have just been loaded.



System Settings

The current system settings can be saved as a file onto the local hard drive.

Save Settings To Local Hard Drive

Load Settings From Local Hard Drive

Note: The system has to be restarted after the configuration is restored.

Save Settings and Reboot the System.

Restore To Factory Default Settings

Force the DSL-G624T Wireless LAN to restart.

Save System Settings and Restore Defaults

Restore Factory Default Settings

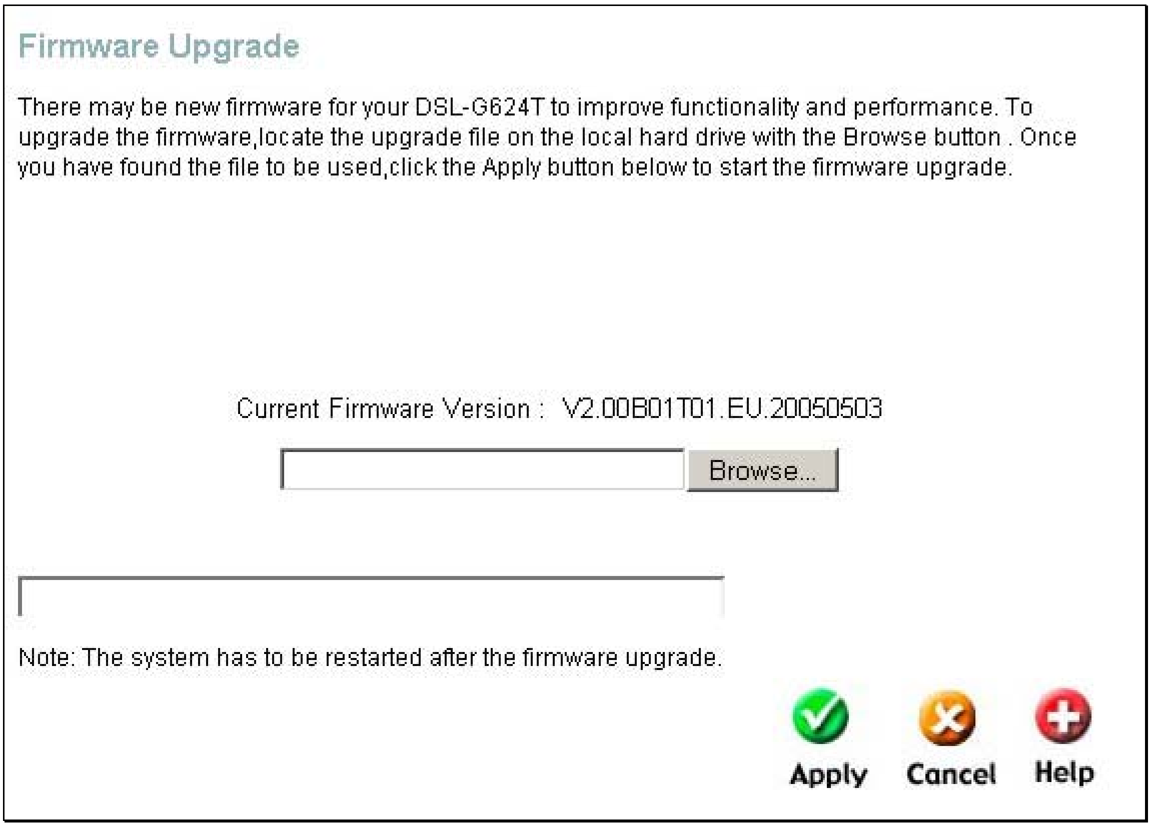
To reset the Router to its factory default settings, click the **Restore** button in the Administrator Settings menu. You will be prompted to confirm your decision to reset the Router. The Router will reboot with the factory default settings including IP settings and Administrator password.

Firmware

Note

Performing a Firmware Upgrade can sometimes change the configuration settings. Be sure to back-up the Router's configuration settings before upgrading the firmware.

Use the Firmware Upgrade menu to load the latest firmware for the device. Note that the device configuration settings may return to the factory default settings, so make sure you save the configuration settings with the System Settings menu described above.



Firmware Upgrade

There may be new firmware for your DSL-G624T to improve functionality and performance. To upgrade the firmware,locate the upgrade file on the local hard drive with the Browse button . Once you have found the file to be used,click the Apply button below to start the firmware upgrade.

Current Firmware Version : V2.00B01T01.EU.20050503

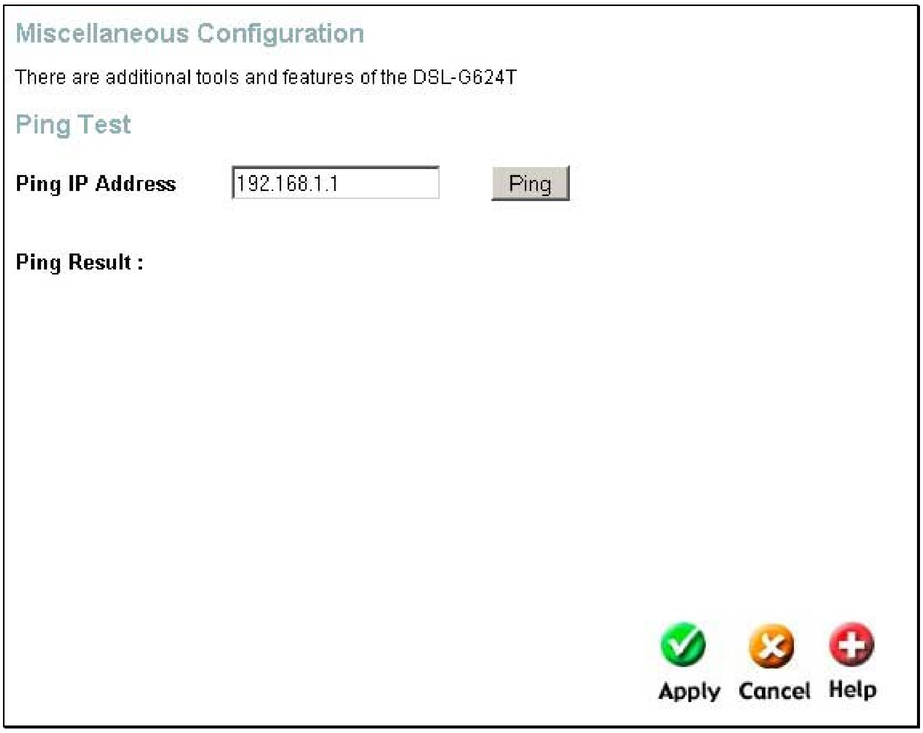
Note: The system has to be restarted after the firmware upgrade.

Firmware Upgrade

To upgrade firmware, type in the name and path of the file or click on the **Browse** button to search for the file. Click the **Apply** button to begin copying the file. The file will load and restart the Router automatically.

Ping Test (Miscellaneous)

To perform a statndard Ping test for network connectivity, click the **Misc.** menu button in the Tools directory to view the **Miscellaneous Configuration** menu. The Ping test functions on the WAN and LAN interfaces. Type the IP address you want to check in the space provided and click the **Ping** button. Read the Ping test result in the space immediately below.



Miscellaneous Configuration

There are additional tools and features of the DSL-G624T

Ping Test

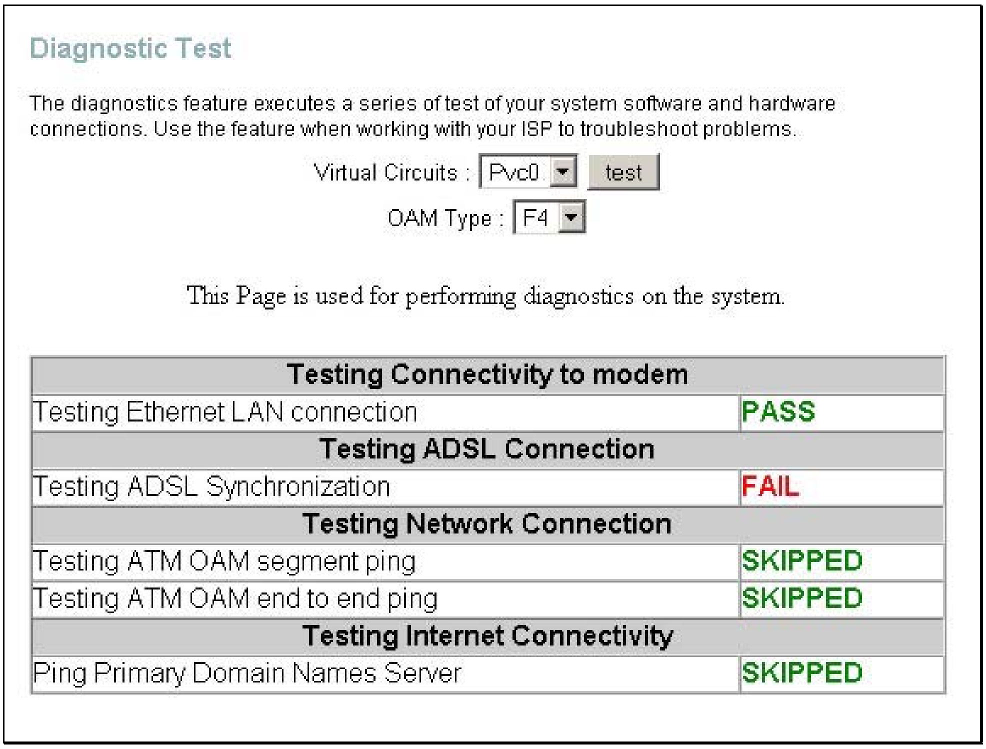
Ping IP Address: 192.168.1.1

Ping Result :

Miscellaneous Configuration menu

Test

The Test menus are used to test connectivity of the Router. A Ping test may be done through the local or external interface to test connectivity to known IP addresses. The diagnostics feature executes a series of test of your system software and hardware connections. Use this Test menu when working with your ISP to troubleshoot problems.



Diagnostic Test

The diagnostics feature executes a series of test of your system software and hardware connections. Use the feature when working with your ISP to troubleshoot problems.

Virtual Circuits : Pvc0

OAM Type : F4

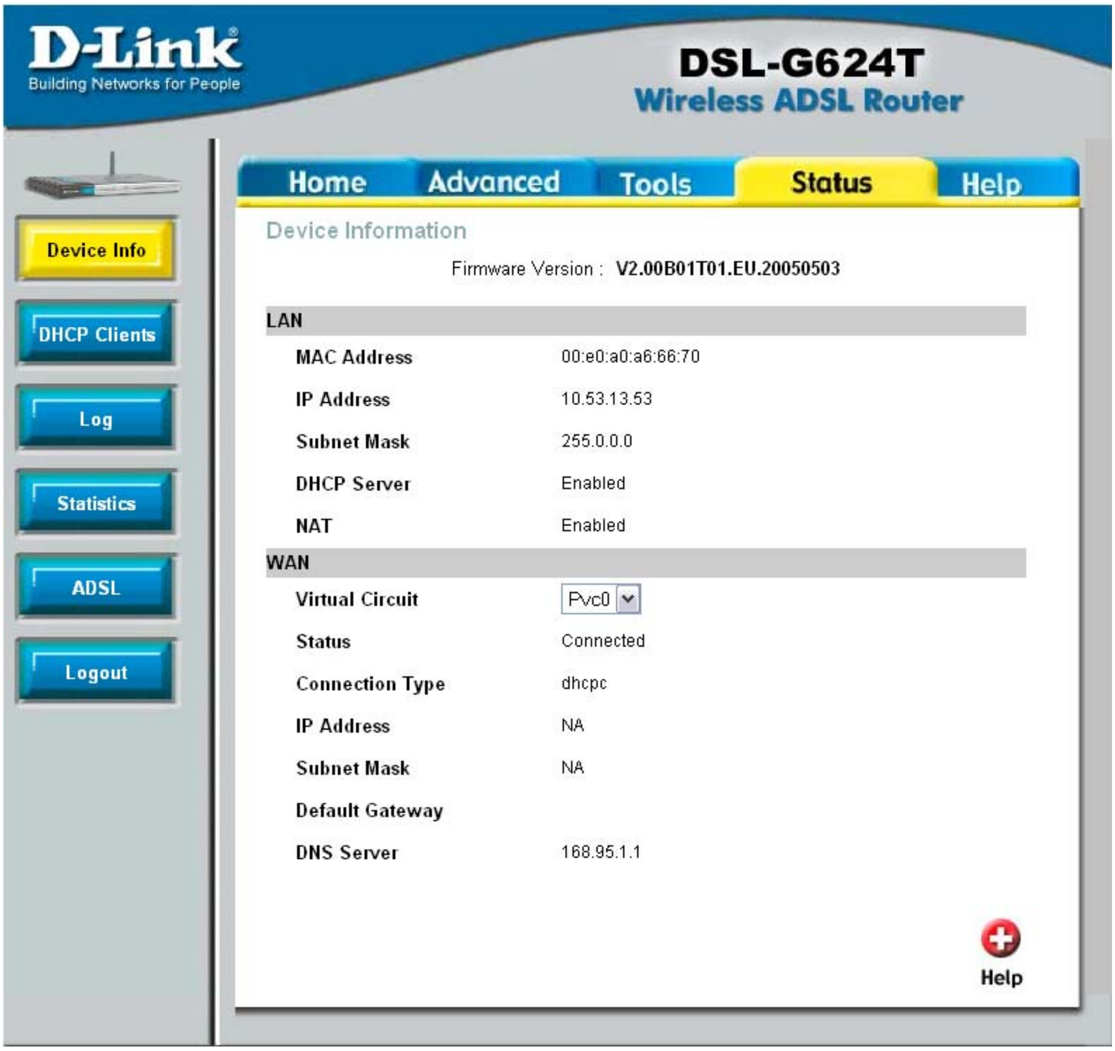
This Page is used for performing diagnostics on the system.

Testing Connectivity to modem	
Testing Ethernet LAN connection	PASS
Testing ADSL Connection	
Testing ADSL Synchronization	FAIL
Testing Network Connection	
Testing ATM OAM segment ping	SKIPPED
Testing ATM OAM end to end ping	SKIPPED
Testing Internet Connectivity	
Ping Primary Domain Names Server	SKIPPED

Diagnostics Test Menu

Status Information

Use the various read-only menus to view system information and monitor performance.



Device Information

Firmware Version : V2.00B01T01.EU.20050503

LAN

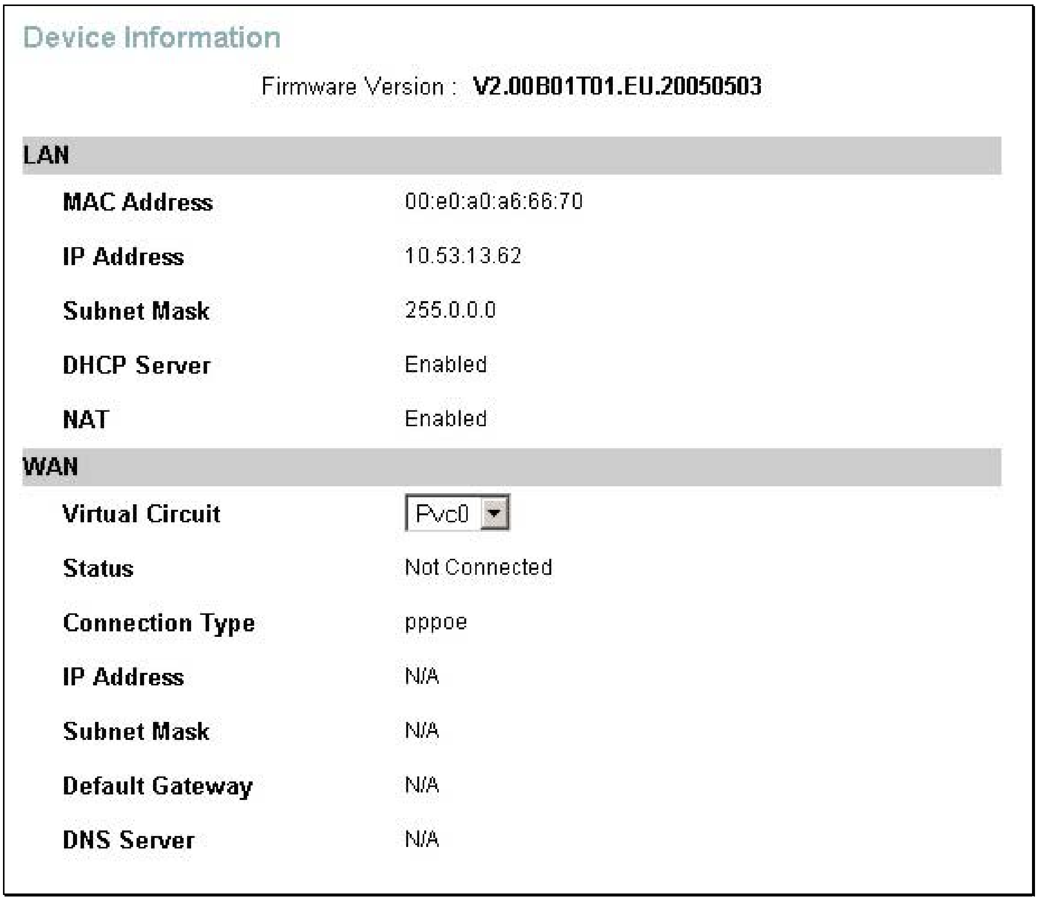
MAC Address	00:e0:a0:a6:66:70
IP Address	10.53.13.53
Subnet Mask	255.0.0.0
DHCP Server	Enabled
NAT	Enabled

WAN

Virtual Circuit	Pvc0
Status	Connected
Connection Type	dhcpc
IP Address	NA
Subnet Mask	NA
Default Gateway	
DNS Server	168.95.1.1

Device Information Display

Use the Device Information window to quickly view basic current information about the LAN and WAN interfaces and device information including Firmware Version and MAC address.



Device Information

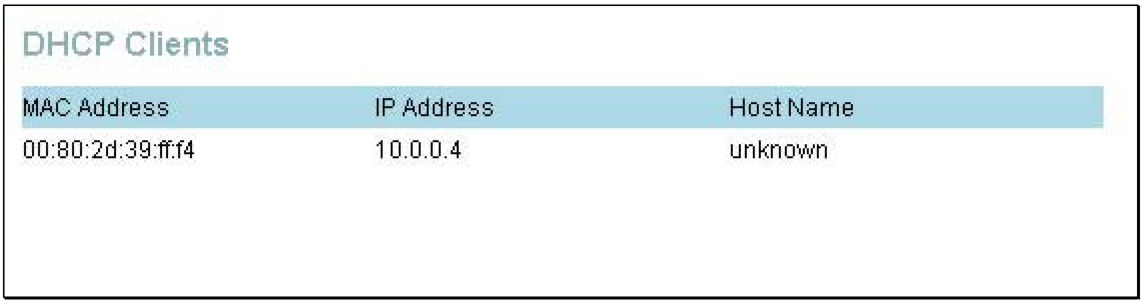
Firmware Version : **V2.00B01T01.EU.20050503**

LAN	
MAC Address	00:e0:a0:a6:66:70
IP Address	10.53.13.62
Subnet Mask	255.0.0.0
DHCP Server	Enabled
NAT	Enabled
WAN	
Virtual Circuit	Pvc0
Status	Not Connected
Connection Type	pppoe
IP Address	N/A
Subnet Mask	N/A
Default Gateway	N/A
DNS Server	N/A

Device Information display

DHCP Clients

This screen will allow the user to view DHCP clients currently attached to the router, defined by MAC Address, IP Address and Host Name.



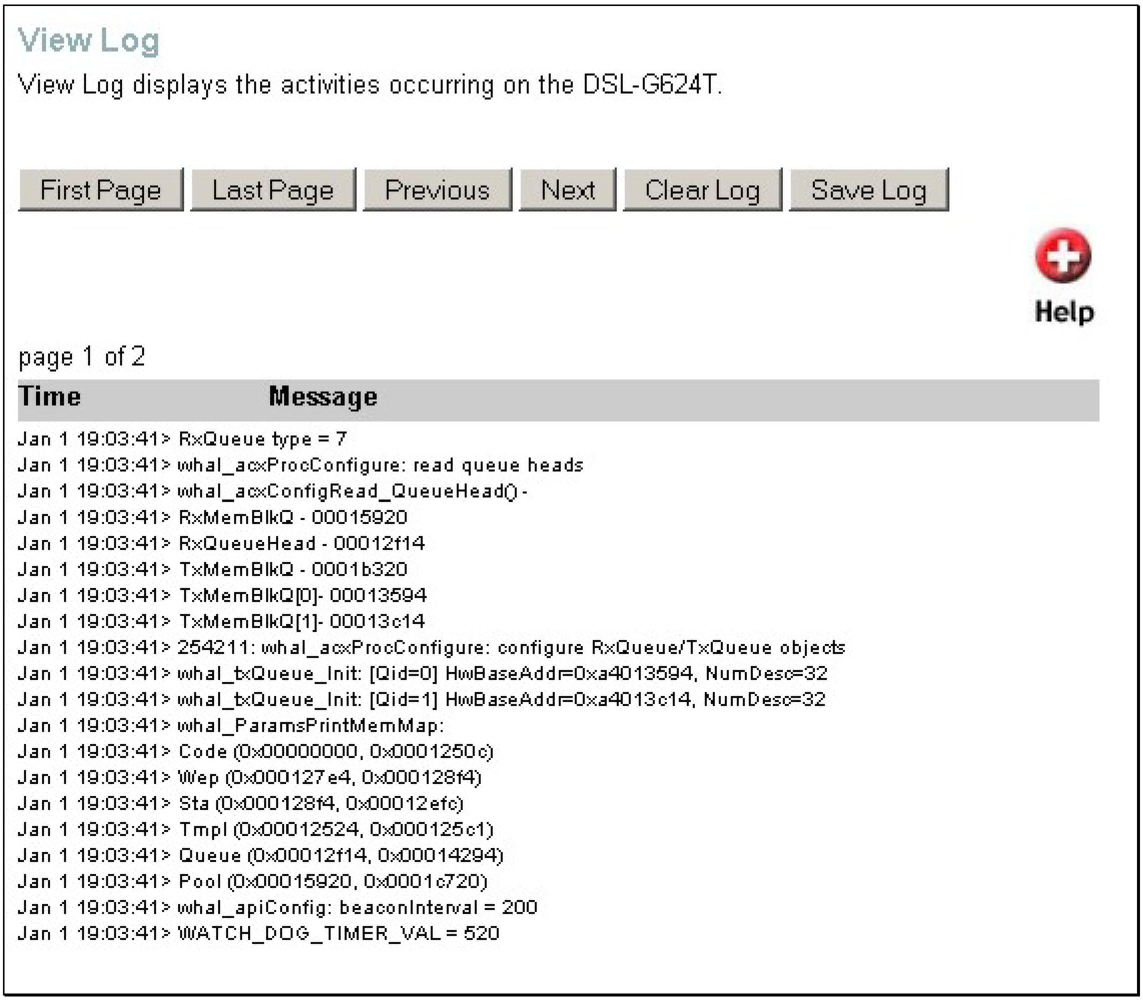
DHCP Clients

MAC Address	IP Address	Host Name
00:80:2d:39:ff:f4	10.0.0.4	unknown

DHCP Clients window

Log

The system log displays chronological event log data. Use the navigation buttons to view or scroll log pages. You may also save a simple text file containing the log to your computer. Click the Save Log button and follow the prompts to save the file.



View Log displays the activities occurring on the DSL-G624T.

page 1 of 2

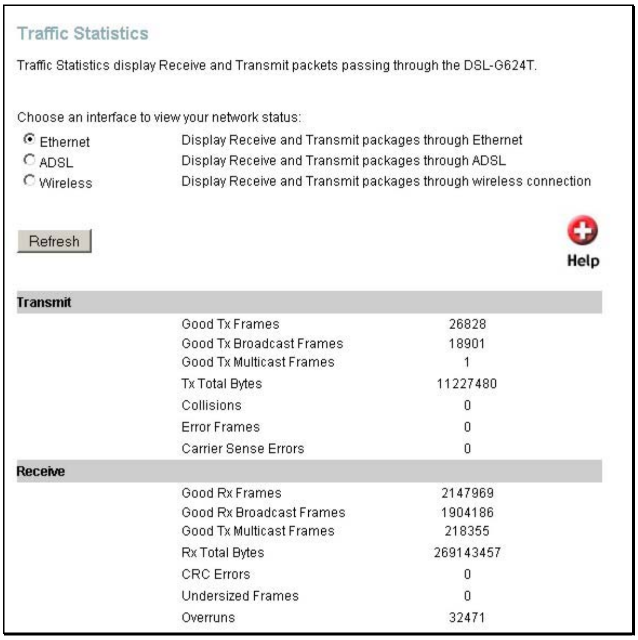
```
Time                    Message
Jan 1 19:03:41> RxQueue type = 7
Jan 1 19:03:41> whal_acxProcConfigure: read queue heads
Jan 1 19:03:41> whal_acxConfigRead_QueueHead() -
Jan 1 19:03:41> RxMemBlkQ - 00015920
Jan 1 19:03:41> RxQueueHead - 00012f14
Jan 1 19:03:41> TxMemBlkQ - 0001b320
Jan 1 19:03:41> TxMemBlkQ[0]- 00013594
Jan 1 19:03:41> TxMemBlkQ[1]- 00013c14
Jan 1 19:03:41> 254211: whal_acxProcConfigure: configure RxQueue/TxQueue objects
Jan 1 19:03:41> whal_txQueue_Init: [Qid=0] HwBaseAddr=0xa4013594, NumDesc=32
Jan 1 19:03:41> whal_txQueue_Init: [Qid=1] HwBaseAddr=0xa4013c14, NumDesc=32
Jan 1 19:03:41> whal_ParamsPrintMemMap:
Jan 1 19:03:41> Code (0x00000000, 0x0001250c)
Jan 1 19:03:41> Wep (0x000127e4, 0x000128f4)
Jan 1 19:03:41> Sta (0x000128f4, 0x00012efc)
Jan 1 19:03:41> Tmpl (0x00012524, 0x000125c1)
Jan 1 19:03:41> Queue (0x00012f14, 0x00014294)
Jan 1 19:03:41> Pool (0x00015920, 0x0001c720)
Jan 1 19:03:41> whal_apiConfig: beaconInterval = 200
Jan 1 19:03:41> WATCH_DOG_TIMER_VAL = 520
```

View Log window

Click **Clear Log** delete the current log information.

Traffic

Use the Traffic Statistics window to monitor traffic on the Ethernet, ADSL or Wireless Internet connection. Select the interface for which you want to view packet statistics and the information will appear below.



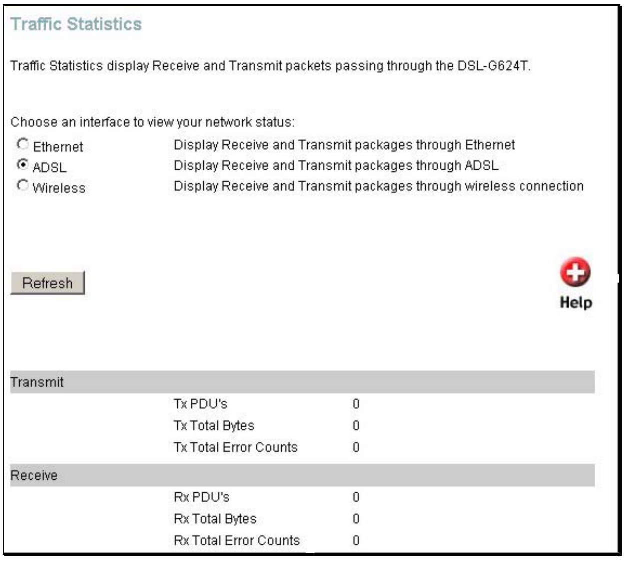
Traffic Statistics

Traffic Statistics display Receive and Transmit packets passing through the DSL-G624T.

Choose an interface to view your network status:

● Ethernet — Display Receive and Transmit packages through Ethernet
○ ADSL — Display Receive and Transmit packages through ADSL
○ Wireless — Display Receive and Transmit packages through wireless connection

Transmit		
	Good Tx Frames	26828
	Good Tx Broadcast Frames	18901
	Good Tx Multicast Frames	1
	Tx Total Bytes	11227480
	Collisions	0
	Error Frames	0
	Carrier Sense Errors	0
Receive		
	Good Rx Frames	2147969
	Good Rx Broadcast Frames	1904186
	Good Tx Multicast Frames	218355
	Rx Total Bytes	269143457
	CRC Errors	0
	Undersized Frames	0
	Overruns	32471



Traffic Statistics

Traffic Statistics display Receive and Transmit packets passing through the DSL-G624T.

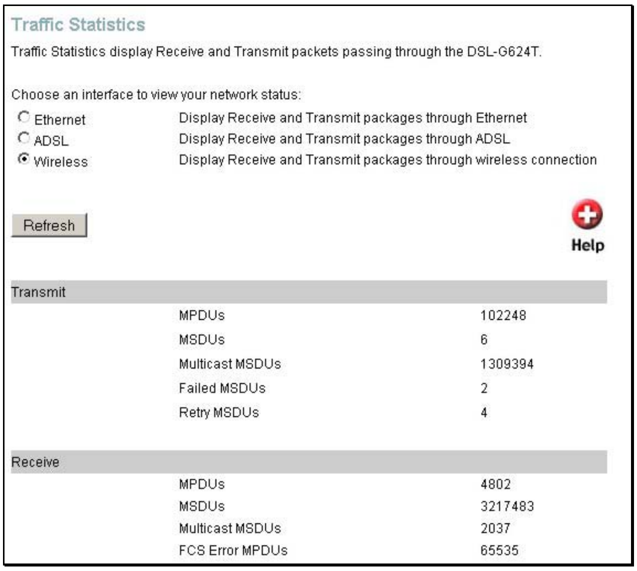
Choose an interface to view your network status:

○ Ethernet — Display Receive and Transmit packages through Ethernet
● ADSL — Display Receive and Transmit packages through ADSL
○ Wireless — Display Receive and Transmit packages through wireless connection

Transmit		
	Tx PDU's	0
	Tx Total Bytes	0
	Tx Total Error Counts	0
Receive		
	Rx PDU's	0
	Rx Total Bytes	0
	Rx Total Error Counts	0

Traffic Statistics information (Ethernet)

Traffic Statistics information (Ethernet)



Traffic Statistics

Traffic Statistics display Receive and Transmit packets passing through the DSL-G624T.

Choose an interface to view your network status:

○ Ethernet — Display Receive and Transmit packages through Ethernet
○ ADSL — Display Receive and Transmit packages through ADSL
● Wireless — Display Receive and Transmit packages through wireless connection

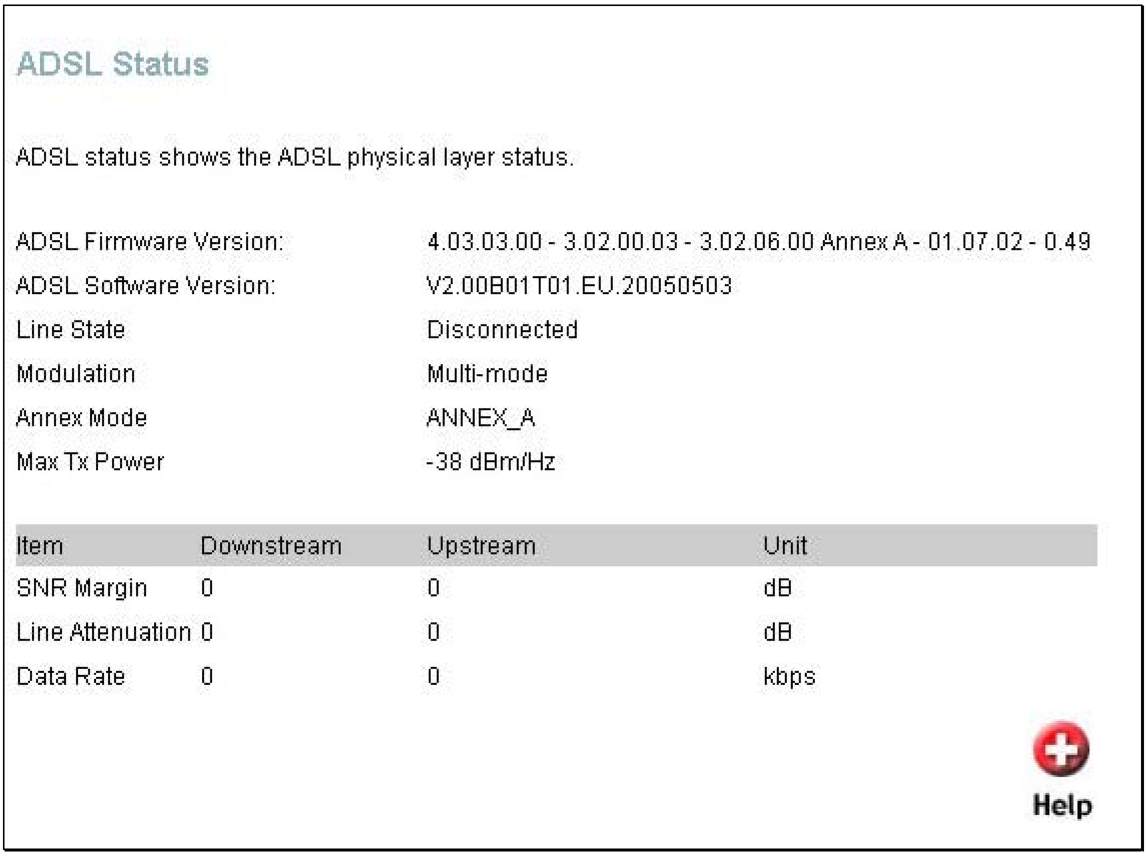
Transmit		
	MPDUs	102248
	MSDUs	6
	Multicast MSDUs	1309394
	Failed MSDUs	2
	Retry MSDUs	4
Receive		
	MPDUs	4802
	MSDUs	3217483
	Multicast MSDUs	2037
	FCS Error MPDUs	65535

Traffic Statistics information (Wireless)

Click **Refresh** to view traffic information.

ADSL

Use the ADSL Status information and the Test page for troubleshooting the ADSL connection.



ADSL Status

ADSL status shows the ADSL physical layer status.

ADSL Firmware Version:	4.03.03.00 - 3.02.00.03 - 3.02.06.00 Annex A - 01.07.02 - 0.49
ADSL Software Version:	V2.00B01T01.EU.20050503
Line State	Disconnected
Modulation	Multi-mode
Annex Mode	ANNEX_A
Max Tx Power	-38 dBm/Hz

Item	Downstream	Upstream	Unit
SNR Margin	0	0	dB
Line Attenuation	0	0	dB
Data Rate	0	0	kbps

ADSL Status information

A

Technical Specifications

General		
Standards	IEEE 802.11b/ 802.11g IEEE 802.3/ 802.3u IEEE 802.1d RFC 791 (IP Routing) RFC 792 (UDP) RFC 826 (ARP) RFC 1058 (RIP 1) RFC 1389 (RIP 2) RFC 1483 (Bridged Ethernet) RFC 1577 (IP over ATM) RFC 1661 (PPP) RFC 1994 (CHAP)	RFC 1334 (PAP) RFC 2364 (PPP over ATM) RFC 1631 (NAT) RFC 1877 (Automatic IP assignment) RFC 2516 (PPP over Ethernet) RFC 2131 (DHCP) ANSI T1.413 issue 2 ITU G.992.1 (G.dmt) ITU G.992.2 (G.lite) ITU G.994.1 (G.Hs) ITU-T Rec. I.361 Supports ATM Forum UNI V3.1/4.0 PVC

Physical and Environmental	
DC Inputs: **Power Adapter**	Input: 230V AC 50 ~ 60Hz (per region) Output: 12V AC, 1.2A
Power Consumption	12 Watts (max)
Operating Temperature	5° to 40° C (41° - 104° F)
Humidity	5 to 95% (non-condensing)
Dimensions	198 x 155 x 34 mm
Weight	450 g
EMI	FCC Class B, CE EN301489 SMA
Safety:	CSA International

Wireless	
Modulation	IEEE 802.11b: DQPSK, DBPSK, DSSS, and CCK IEEE 802.11g: BPSK, QPSK, 16QAM, 64QAM, OFDM
Frequency	2400 ~ 2484.5MHz ISM band
Channels	11 channels for United States 13 channels for European Countries 13 channels for Japan
Wireless Data Rates	IEEE 802.11b: 11, 5.5, 2, and 1Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
Media Access Protocol	CSMA/CA with ACK
WEP	64/128/256 bits
Wireless Certification	Wi-Fi WPA
ADSL Data Rates	G.dmt full rate: Downstream up to 8 Mbps Upstream up to 640 Kbps G.lite: Downstream up to 1.5 Mbps Upstream up to 512 Kbps
Media Interface	RJ-11 port ADSL telephone line connection 4 x RJ-45 ports for 10/100BASET Ethernet connection

B

IP Address Setup

The DSL-G624T is designed to provide network administrators maximum flexibility for IP addressing on the Ethernet LAN. The easiest IP setup choice in most cases is to let the Router do it using DHCP, which is enabled by default. This appendix briefly describes various options including DHCP, used for IP setup on a LAN. If you are new to IP networking, the next appendix provides some background information on basic IP concepts.

Assigning Network IP Addresses

The IP address settings, which include the IP address, subnet mask and gateway IP address are the first and most important internal network settings that need to be configured. The Router is assigned a default LAN IP address and subnet mask. If you do not have a preexisting IP network and are setting one up now, using the factory default IP address settings can greatly ease the setup process. If you already have a preexisting IP network, you can adjust the IP settings for the Router to fit within your existing scheme.

Using the Default IP Address

The Router is shipped with a preset default IP address setting of 192.168.1.1 for the LAN port. There are two ways to use this default IP address, you can manually assign an IP address and subnet mask for each PC on the LAN or you can instruct the Router to automatically assign them using DHCP. The simplest method is to use DHCP. The DHCP function is active by default.

Manual IP Address Assignment

Manually configuring IP settings for the LAN means you must manually set an IP address, subnet mask and IP address of the default gateway (the Router's IP address) on each networked computer. The example listed below describes IP configuration for computers running Windows 95 or Windows 98. Regardless of what operating system is used on each workstation, the three network IP settings must be defined so the network interface used by each workstation can be identified by the Router, and vice versa. For detailed information about configuring your workstations IP settings, consult the user's guide included with the operating system or the network interface card (NIC).

1. In Windows 95/98, click on the **Start** button, go to **Settings** and choose **Control Panel**.
2. In the window that opens, double-click on the **Network** icon.
3. Under the Configuration tab, select the **TCP/IP** component and click *Properties*.
4. Choose the *Specify an IP address* option and edit the address settings accordingly. Consult the table below for IP settings on a Class C network.

Using Default IP without DHCP			
Host	**IP Address**	**Subnet Mask**	**Gateway IP**
Router	192.168.1.1	255.255.255.0	
Computer #1	192.168.1.2	255.255.255.0	192.168.1.1
Computer #2	192.168.1.3	255.255.255.0	192.168.1.1
Computer #3	192.168.1.4	255.255.255.0	192.168.1.1

IP Setup - Example #1

Please note that when using the default IP address as in the above example, the first number in the IP address must always be the same with only the second, third and fourth number changing. The first number defines the network IP address (all machines must belong to the same IP network), while the last three numbers denote the host IP address (each computer must have a unique address to distinguish it on the network). The IP address scheme used in Example #1 can be used for any LAN that requires up to 253 separate IP addresses (excluding the Router). Notice that the subnet mask is the same for all machines and the default gateway address is the LAN IP address of the Router.

It is a good idea to make a note of each device's IP address for reference during troubleshooting or when adding new stations or devices.

Using DHCP

The second way to use the default settings is to allow the Router to automatically assign IP settings for workstation using DHCP. To do this, simply make sure your computers' IP addresses are set to 0.0.0.0 (under Windows, choose the option Obtain an IP address automatically in the TCP/IP network component described above). When the computers are restarted, their IP settings will automatically be assigned by the Router. The Router is set by default to use DHCP. See the discussion in Chapter 3 for information on how to use configure the Router for DHCP.

Changing the IP Address of the Router

When planning your LAN IP address setup, you may use any scheme allowed by rules that govern IP assignment. It may be more convenient or easier to remember an IP scheme that use a different address for the Router. Or you may be installing the Router on a network that has already established the IP settings. Changing the IP address is a simple matter and can be done using the web manager (see *LAN IP Address* in Chapter 5). If you are incorporating the Router into a LAN with an existing IP structure, be sure to disable the DHCP function. Also, consider the effects of NAT (Network Address Translation). This is enabled by default but may be disabled in the NAT menu of the Advanced directory.

An IP addressing scheme commonly used for Ethernet LANs establishes 10.0.0.1 as the base address for the network. Using Example #2 below, the Router is assigned the base address 10.0.0.1 and the remaining addresses are assigned manually or using DHCP.

Alternative IP Assignment			
Host	**IP Address**	**Subnet Mask**	**Gateway IP**
Router	10.0.0.1	255.0.0.0	
Computer #1	10.0.0.2	255.0.0.0	10.0.0.1
Computer #2	10.0.0.3	255.0.0.0	10.0.0.1
Computer #3	10.0.0.4	255.0.0.0	10.0.0.1

IP Setup - Example #2

These two examples are only examples you can use to help you get started. Other common private network IP addressing schemes use a base address of 192.168.0.1 or 10.1.1.1. If you are interested in more advanced information on how to use IP addressing on a LAN there are numerous resources freely available on the Internet. There are also many books and chapters of books on the subject of IP address assignment, IP networking and the TCP/IP protocol suite.

C

IP Concepts

This appendix describes some basic IP concepts, the TCP/IP addressing scheme and shows how to assign IP Addresses.

When setting up the Router, you must make sure it has a valid IP address. Even if you will not use the WAN port (ADSL port), you should, at the very least, make sure the Ethernet LAN port is assigned a valid IP address. This is required for telnet, in-band SNMP management, and related functions such as "trap" handling and TFTP firmware download.

IP Addresses

The Internet Protocol (IP) was designed for routing data between network sites all over the world, and was later adapted for routing data between networks within any site (often referred to as "subnetworks" or "subnets"). IP includes a system by which a unique number can be assigned to each of the millions of networks and each of the computers on those networks. Such a number is called an IP address.

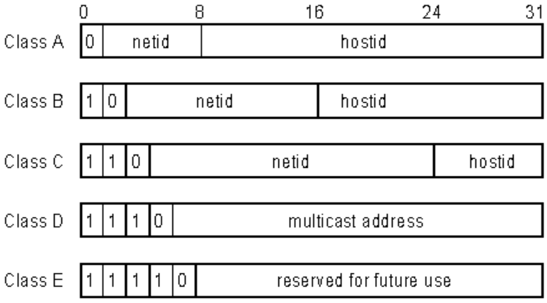
To make IP addresses easy to understand, the originators of IP adopted a system of representation called "dotted decimal" or "dotted quad" notation. Below are examples of IP addresses written in this format:

201.202.203.204 189.21.241.56 125.87.0.1

Each of the four values in an IP address is the ordinary decimal (base 10) representation of a value that a computer can handle using eight "bits" (binary digits — 1s and 0s). The dots are simply convenient visual separators.

Zeros are often used as placeholders in dotted decimal notation; 189.21.241.56 can therefore also appear as 189.021.241.056.

IP networks are divided into three classes on the basis of size. A full IP address contains a network portion and a "host" (device) portion. The network and host portions of the address are different lengths for different classes of networks, as shown in the table below.



Networks attached to the Internet are assigned class types that determine the maximum number of possible hosts per network. The previous figure illustrates how the net and host portions of the IP address differ among the three classes. Class A is assigned to networks that have more than 65,535 hosts; Class B is for networks that have 256 to 65534 hosts; Class C is for networks with less than 256 hosts.

IP Network Classes			
Class	**Maximum Number of Networks in Class**	**Network Addresses (Host Portion in Parenthesis)**	**Maximum Number of Hosts per Network**
A	126	1(.0.0.0) to 126 (.0.0.0)	16,777,214
B	16,382	128.1(.0.0) to 191.254(.0.0)	65,534
C	2,097,150	192.0.1(.0) to 223.255.254(.0)	254

Note

All network addresses outside of these ranges (Class D and E) are either reserved or set aside for experimental networks or multicasting.

When an IP address's host portion contains only zero(s), the address identifies a network and not a host. No physical device may be given such an address.

The network portion must start with a value from 1 to 126 or from 128 to 223. Any other value(s) in the network portion may be from 0 to 255, except that in class B the network addresses 128.0.0.0 and 191.255.0.0 are reserved, and in class C the network addresses 192.0.0.0 and 223.255.255.0 are reserved.

The value(s) in the host portion of a physical device's IP address can be in the range of 0 through 255 as long as this portion is not all-0 or all-255. Values outside the range of 0 to 255 can never appear in an IP address (0 to 255 is the full range of integer values that can be expressed with eight bits).

The network portion must be the same for all the IP devices on a discrete physical network (a single Ethernet LAN, for example, or a WAN link). The host portion must be different for each IP device — or, to be more precise, each IP-capable port or interface — connected directly to that network.

The network portion of an IP address will be referred to in this manual as a **network number**; the host portion will be referred to as a **host number**.

To connect to the Internet or to any private IP network that uses an Internet-assigned network number, you must obtain a registered IP network number from an Internet-authorized network information center. In many countries you must apply through a government agency, however they can usually be obtained from your Internet Service Provider (ISP).

If your organization's networks are, and will always remain, a closed system with no connection to the Internet or to any other IP network, you can choose your own network numbers as long as they conform to the above rules.

If your networks are isolated from the Internet, e.g. only between your two branch offices, you can assign any IP Addresses to hosts without problems. However, the Internet Assigned Numbers Authority (IANA) has reserved the following three blocks of IP Addresses specifically for private (stub) networks:

Class	Beginning Address	Ending Address
A	10.0.0.0	10.255.255.255
B	172.16.0.0	172.31.255.255
C	192.168.0.0	192.168.255.255

It is recommended that you choose private network IP Addresses from the above list. For more information on address assignment, refer to RFC 1597, *Address Allocation for Private Internets* and RFC 1466, *Guidelines for Management of IP Address Space*.

Subnet Mask

In the absence of subnetworks, standard TCP/IP addressing may be used by specifying subnet masks as shown below.

IP Class	Subnet Mask
Class A	255.0.0.0
Class B	255.255.0.0
Class C	255.255.255.0

Subnet mask settings other than those listed above add significance to the interpretation of bits in the IP address. The bits of the subnet mask correspond directly to the bits of the IP address. Any bit an a subnet mask that is to correspond to a net ID bit in the IP address must be set to 1.

D

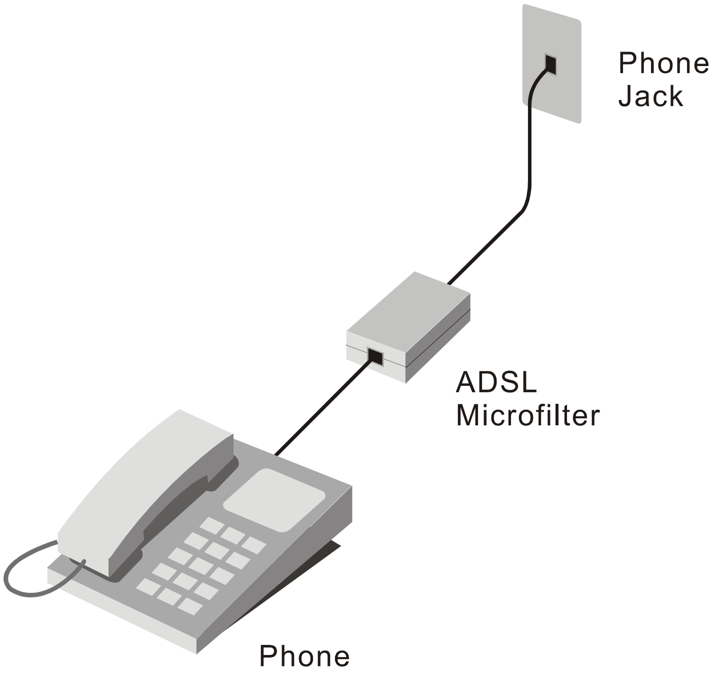
Micro Filters and Splitters

Most ADSL clients will be required to install a simple device that prevents the ADSL line from interfering with regular telephone services. These devices are commonly referred to as micro filters or sometimes called (inaccurately) line splitters. They are easy to install and use standard telephone connectors and cable.

Some ADSL service providers will send a telecommunications technician to modify the telephone line, usually at the point where the telephone line enters the building. If a technician has divided or split your telephone line into two separate lines - one for regular telephone service and the other for ADSL – then you do not need to use any type of filter device. Follow the instructions given to you by your ADSL service provider about where and how you should connect the Router to the ADSL line.

Micro filters

Unless you are instructed to use a filter it will be necessary to install a micro filter (low pass filter) device for each telephone or telephone device (answering machines, Faxes etc.) that shares the line with the ADSL service. Micro filters are easy-to-install, in-line devices, which attach to the telephone cable between the telephone and wall jack. Micro filters that install behind the wall plate are also available. A typical in-line micro filter installation is shown in the diagram below.



Micro filter Installation

DO NOT install the micro filter between the Router and the telephone jack. Micro filters are only intended for use with regular telephones, Fax machines and other regular telephone devices.

Split Line Filter

If you are instructed to use a split line filter you must install the device between the Router and the phone jack. Use standard telephone cable with standard RJ-11 connectors. The splitter has three RJ-11 ports used to connect to the wall jack, the Router and if desired, a telephone or telephone device. The connection ports are typically labeled as follows:

Line - This port connects to the wall jack.

ADSL – This port connects to the Router.

Phone – This port connects to a telephone or other telephone device.